

V. 4 #21
Jl 31, 1901
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CURRENT NOTES AND COMMENTS

Reference will be found in another part of this issue to threatened trouble between the management of the Pan-American exposition and the Automobile Club of America, due to the lack of interest taken by the former in the automobile events scheduled to take place under the club's management during the week of September 16. The club has been at great trouble and expense in the promotion of the New York to Buffalo endurance test and other events designed to form part of the automobile week at the exposition. It has tried in vain to induce the directors of the exhibition to take a more active interest in the matter.

The trouble culminated on Wednesday, when the Buffalo representative of this paper wired as follows:

Buffalo, N. Y., July 31.—President Martin, of the Buffalo Automobile Club, has resigned from the sports committee of the Pan-American exposition. He is dissatisfied with the treatment of automobile matters by the directors, and told your representative that he should advocate taking the contests away from Pan-American auspices and holding them elsewhere.

Makers' Association and Road Contests

At the exact moment that this paper was preparing for its readers the opinions of manufacturers on the subject of participation in tests promoted by clubs and others, the executive committee of the manufacturers' association was in session in New York giving consideration to the same matter. It has been remarked by a correspondent that among the manufacturers whose opinions were presented there was a noticeable disinclination on the part of makers of steam vehicles to take part in tests, but it should also be remarked that the committee which passed upon the matter is made up of representatives of all three classes of vehicles, about equally divided. The official notice sent to the press by the secretary reads as follows:

At a meeting of the executive commit-

tee, on July 23, the following resolutions were passed:

Whereas, applications from all parts of the country are being received by manufacturers to take part in long distance contests, speed tests, automobile exhibits, and charity fairs; and

Whereas, these contests and exhibitions, when properly conducted, involve the expenditure of large sums of money, while at the same time requiring careful thought upon the part of the chief officers of manufacturing organizations; and

Whereas, the task of discriminating between clubs and localities involves many difficulties and leads to unpleasant feeling and the creating of dissatisfaction calculated to injure the business interests of the manufacturer; therefore, be it

Resolved, that the National Association of Automobile Manufacturers hereby formally requests of each of its members that they shall make no agreement to take part in long distance tests, speed contests or automobile exhibitions without said long distance tests, speed contests or automobile exhibitions, first securing the approval of the executive committee of the National Association of Automobile Manufacturers; be it

Resolved, that the manufacturers of the association, have received notice of the proposed endurance contest from New York to Buffalo, to be held under the auspices of the Automobile Club of America, commencing September 9, the said endurance contest is hereby approved and sanctioned by the association.

The Vehicle Equipment Co. of Brooklyn was elected an active member, and Messrs J. H. Williams & Co., of same place, an associate member, at said meeting.

It will be observed that the notice contains only a recommendation of the board, no absolute ruling being possible, but it will doubtless be generally observed except by those who have already

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pledged themselves to take part in events already announced.

The scheme to hold the annual meeting at Buffalo was strongly opposed. It will be held at New York during the show.

The members of the committee present were Messrs. Field, Owen, D. S. Walker, Winslow, Reinhardt and Allison, representing De Dion, Winton, Mobile, International, Overman and Woods, respectively.

Exhibitors at New York

The first allotment of space at the New York Automobile show has been made. The results are given below:

On the main floor, center: American Bicycle Co., Mobile company, Haynes-Apperson company, Winton Motor Carriage Co., Electric Vehicle Co., Woods Motor Vehicle Co., Peerless Mfg. Co., Overman Automobile Co., Baker Motor Vehicle Co., Autocar Co., DeDion-Bouton Motorette Co., Locomobile company.

On the main floor, sides: Geneva Automobile & Mfg. Co., Crest Mfg. Co., Remington Automobile & Motor Co., Upton Machine Co., Knox Automobile Co., Automotor Co., Desberon Motor Car Co., Steamobile company, Loomis Automobile Co., Robinson Motor Vehicle Co., Lane Motor Vehicle Co.

In the gallery: Dow Portable Electric Co., Diamond Rubber Co., Dixon Crucible Co., Charles E. Miller, Janney, Steinmetz & Co., N. Y. Belting & Packing Co., Rose Mfg. Co., Gray & Davis, B. F. Goodrich Co., Veeder Mfg. Co., Automobile Supply Co., Hartford Rubber Works Co., Badger Brass Mfg. Co., Consolidated Rubber Tire Co., Baldwin Cycle Chain Co.

Rubber King Resigns

Charles R. Flint, the man who aspires to control the rubber trade of this country and has come pretty close doing it, has heretofore been treasurer of the United States Rubber Co., and chairman of the board of the Rubber Goods Mfg. Co. He has just resigned the former position to devote more of his time to the other company, of which he is the largest stockholder. He will remain a member of the board of the United States Rubber

Co. In explanation of his action Mr. Flint says:

"For some time I have only had a nominal interest in the United States Rubber Co., and in view of my large interest in the Rubber Goods Mfg. Co. and the increasing demands on my time, I have thought it better, in justice to both the United States Rubber Co. and myself, to make way for some one who had a large stock interest and who, from the point of view of policy and time, could give closer attention to the affairs of the company.

"I consider that the United States Steel Corporation typifies the acme of scientific business and I have no doubt that the same result which has taken place in the steel industry will eventually come to pass in the rubber industry."

No Races at Pan-American

When Mr. Bostwick, who was one of the judges of automobiles at the Pan-American, arrived at Buffalo he had an interview with Dr. Martin, president of the local club, and something was said by the papers, purporting to come from Dr. Martin, to the effect that it was possible the speed and endurance tests might not take place. The exposition directors, it was said, had not recognized the automobile committee in as thorough a manner as the latter would like, and the contests might, therefore, take place in some other part of the country. The Courier had two double-column scare-head articles about it.

To a representative of this paper the doctor denied that he had seen reporters, but acknowledged that matters were not satisfactory and that the exposition folks had failed to grasp the importance of the interests represented by the committee. No contests can take place in the exposition grounds, the track of the Stadium being too small, but it was used by the judges of the exhibit in putting the exhibitors of various vehicles through their paces. This may account for the lax attention of the exposition directors, as there can be no financial reward to them from the speed contests.

Pierce Company Adds Automobiles

Geo. N. Pierce Cycle Co. will make automobiles. This fact was announced

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by the company last week after the officers had tested their latest experimental carriage, which is propelled by a DeDion motor. Mr. May of the company was recently seen testing the latest Pierce production, a runabout which looked smart and ran splendidly. It is said that the Pierce company will proceed cautiously and will not build a large number until it is thoroughly satisfied that the goods are what the public demands. This is consistent with the company's policy. Pierce goods are good goods, always.

Dunlop Goes to Hartford

There have been rumors for some weeks, to the effect that the Dunlop company, whose headquarters have been at Belleville, N. J., would be absorbed by the Hartford Rubber Works, which has made large quantities of goods for the other concern during the last 12 months. The report is now confirmed. This does not mean, however, that the name of Dunlop will be allowed to suffer. Too many thousands of dollars have been expended in advertising it to allow so valuable an asset to go to waste.

The rubber trust, by which both companies are owned, seems to have decided that, in the interests of economy the move would be desirable. That is the only consideration necessary in these days of combinations and for that matter there is no reason why the tires cannot be made just as well at one factory as another, especially in view of the fact that many of the materials have heretofore been shipped from Hartford to the Jersey factory.

Notice of the change has been given the employes of the factory a month in advance to enable them to procure positions elsewhere, a bit of consideration not often met with in connection with events of this nature. The town of Belleville, of course, mourns the loss of a profitable industry which has been one of its mainstays for the last four years.

Sensational Story Checked

One day last week the Cleveland papers contained a report, which was also wired to papers in other cities, of an alleged explosion of a Toledo steam vehicle. According to the story the ma-

chine blew up without the least warning and without apparent cause while no one was touching it, badly burning one of the attaches of the establishment. Investigation shows that the story was a mass of inaccuracies. The correct version of the affair is told by the local representative of the American Bicycle Co. in the correspondence column of this paper, but the matter appeared in so serious a light at the outset that particular reference is made to it here that the reader may be fully advised of the facts.

Capital of Nine Millions

When a promoter named Curley, an operator not unknown to Wall street, promised to revolutionize the automobile industry about 18 months ago, and by the methods of Hooley sought to interest the public in his promotion, he brought together two people who seem to have since made good use of their time in the development of the automobile. The one is E. C. Stearns, of Syracuse, formerly one of the most widely advertised bicycle manufacturers in the world and the other W. W. Gibbs, a man largely interested in traction interests in Philadelphia and said to be wealthy.

The result of the acquaintance thus begun has been the organization of the Stearns Automobile Co., announced as having been formally consummated at Philadelphia, last week, and incorporated with a capital of \$9,500,000, divided into 20,000 shares of 6 per cent preferred and the remainder common stock, each of the par value of \$25 per share. Apparently these shares are to be sold on the open market sooner or later, though so far no account has been given of the offerings of the company to make good so large an amount, except that Mr. Stearns has succeeded in producing a satisfactory gasoline motor and has a factory capable of turning out 10 machines a day.

An extraordinary statement is attributed to Mr. Stearns by one of the New York papers. He is reported to have said that the carriages, which are to be sold at \$700, can be made in quantities at a price not in excess of \$225, leaving an immense profit for the makers. A profit of a million dollars a year, dividends

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of 6 per cent on all the stock and a surplus of \$400,000 to develop the business are glibly talked of. All of which strikes us as twaddle in view of the fact that Mr. Stearns is well known in the hardware and cycle trades as a hard-headed business man who makes no rash statements.

The factory to be used is that of the old Barnes Cycle Co., which is capable of providing accommodations for at least 500 men.

Just a Plain Fabrication

New York, July 26.—A story was published here this morning to the effect that some millionaire chauffeurs were to build a steel automobile speedway 100 miles straight away across Long Island. The facts are that a reporter had heard of the experiments Gen. Roy Stone is making for the government with such a road for military purposes and asked Mr. Chamberlin what he thought of such a road for automobiles. Mr. Chamberlin naturally said he thought the idea a good one and the yellow journal reporter did the rest.

Equipment Company Buys a New Factory

The Standard Anti-Friction Equipment Co., which has been unable to devote extensive attention to the development of the automobile branch of its business because of lack of facilities to take care of the orders offered, has now purchased the factory of the Carriage Wheel Co., of Batavia, N. Y., a concern which has a capital of \$125,000.

The purchasing company is the manufacturer of all kinds of running gear for vehicles. In addition to purchasing outright the big Batavia plant, it has purchased a gear factory at Amesbury, Mass.

The concern is to have all of its axles and springs made under contract by the Sheldon Axle Co., of Wilkesbarre, Pa., and its ball bearings will be furnished by the Chicago Screw Co., as heretofore. The company has made a contract with the Batavia Rubber Tire Co., a large producer, to take the latter's entire output of solid rubber tires. All the wood wheels used by the equipment company are to be manufac-

tured at the Batavia factory, and its rubber tires are to be applied there.

The capacity of the factory is to be greatly increased. The Batavia interests are to continue under the old management.

Shareholders Receive Small Dividend

A dividend of \$2.50 per share has been paid to the stockholders of the New England Electrical Vehicle Co., now undergoing the pangs of dissolution. The amount was paid out of the treasury cash of \$607,000 on hand when the company suspended operations. Since that time the company has disposed of its Newport plant and equipment for cash, so that it should have in the neighborhood of \$75,000 on hand after the payment of the above dividend. This money is retained as an insurance fund in case of accident claims. There are unquestionably sufficient assets remaining to pay at least \$1.50 per share additional dividends. Besides the present cash on hand, there remain the Boston real estate, assessed for \$204,000, and a hundred or more heavy cabs, the value of which is problematical. With the progress now being made in securing lighter and more efficient storage batteries, it is not unlikely that some new company will be formed to take over the present plant and equipment of the New England Vehicle Co.

Marking the Route

New York, July 29.—Mr. Stearns, advance agent of the A. C. A., making arrangements for accommodations and measuring distances and grades for the run to the Pan-American, arrived at Buffalo on Saturday. Mr. Jarrige, who is setting the signposts on the route, has completed his task as far as Albany.

Fournier, Charron and Sloan

New York, July 29.—Just before an Age man arrived at the automobile clubhouse to-day, the following cablegram was received from Fournier:

"Enter following Buffalo race: Charron, Panhard; Fournier, Mors; Sloan, Mors."

Fournier has been writing Chairman Batchelder of the N. C. A. and other friends here repeatedly for particulars of

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the Buffalo-Erie race. His intention to come to take part in the race was first announced in this paper. The cable entering Tod Sloan shows that the automobile champion's new friend, the noted jockey, really intends to take part in the big race.

The governors of the A. C. A. are to meet next Thursday and will then pass upon and give out the rules for America's first really big automobile road race.

Touring in the Yosemite

The accompanying illustrations show an incident in the late tour of the Yosemite, undertaken by L. L. Whiton, the De Dion agent at Los Angeles, and his friend, W. G. Hansen. The vehicle, of course, is a De Dion voiturette. The pictures were placed at the disposal of this paper by R. H. Gaylord, of Los Angeles, who was in Chicago last week in search of a high-powered gasoline vehicle, and who has since gone east.

Deering's Auto Mower

In this issue are presented views of the auto-mower made by the Deering company. It has been given repeated tests in all parts of the country lately, and has been declared an unqualified success by the farmers who have wit-

nessed its operation. The company is not desirous of furnishing a detailed description at present. The general appearance and make-up of the machine will be understood from the illustrations.

From one of a number of reports of trials of the machine the following from an Iowa paper is selected:

At the farm, when the field of 40 acres of wild grass was reached,

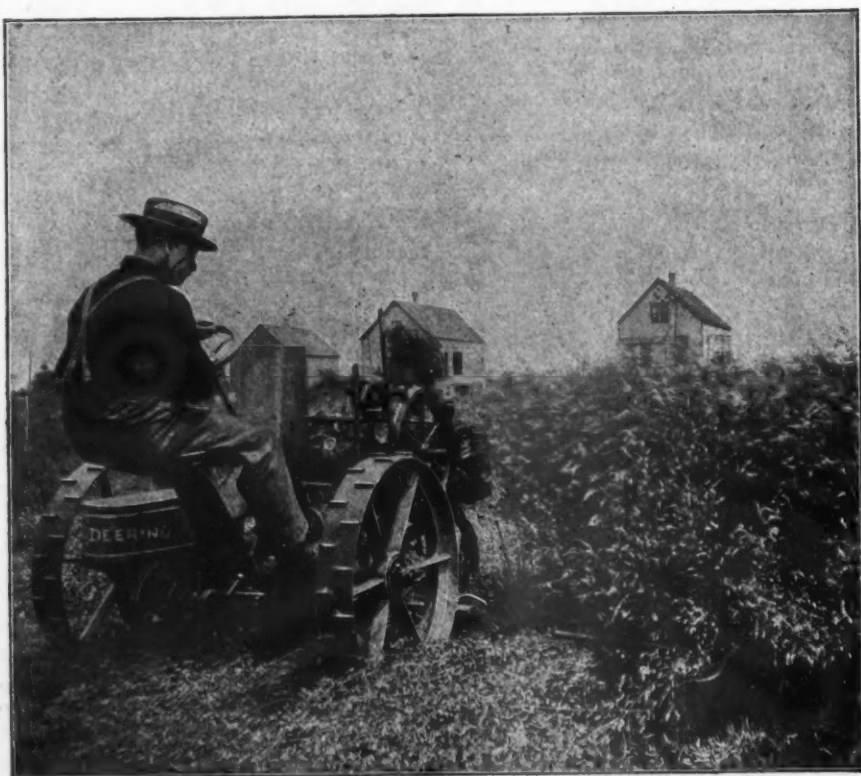


the cutting fixtures of the mower and the machine was put to work on the field. The easiness of motion, the ease with which corners were turned, and the quick work and the speed of the machine, called forth many declarations of its future usefulness and the practical theory of attaching a cheap motive power to farm implements. Its field of possibilities is large and varied. Twenty-two acres of grass cut in nine hours with a five-foot sickle is the record so far made. The engine is of 4-horsepower and will furnish ample power to propel it and cut with an eight-foot sickle bar if wanted. The fact that the same power can be utilized for so many purposes on a farm makes it very valuable. Six gallons of gasoline will operate it for a day. With a pulley wheel attached it can be used to pump water, grind feed, shell corn, clean grain, run a creamery separator, churn, and many other uses on a common farm.



The good roads train, backed by the Illinois Central railroad and operated by the National Good Roads Association, which left Chicago three months ago and has been giving demonstrations at points between that city and New Orleans, has returned north and is now in

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TWO VIEWS OF THE DEERING AUTOMOWER.

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the repair shop for overhauling preparatory to a trip to Buffalo, where a good roads convention is to be held during the week of September 16. President Moore, of the association, reports that 16 stops were made and that 3 miles of macadam and 20 miles of earth roads were laid.

The district commissioners of Washington have received a petition from Lieut.-Gen. Nelson A. Miles, Messrs. P. J. Lockwood, William B. French, Clarence F. Norment, and other owners of automobiles, protesting against the adoption of any police regulation requiring the carrying of lights on private automobiles not common to all other forms of private carriages drawn or propelled by horse power. The petition is accompanied by an argument in support of the position of the automobile owners by P. J. Lockwood.

Max B. Zimmerman, of Milwaukee, who was run over by one of the Electric Vehicle Co.'s carriages at the Chicago show last March, has sued the company for \$10,000 damages. Zimmerman was riding around the track on a motor bicycle and, according to witnesses, stopped in the center of the track and dismounted directly in front of the electric vehicle, which knocked him down, ran over his ankle and injured it severely.

As announced exclusively in the Age last week, arrangements are now completed between some Buffalo automobilists and the Fort Erie track management for a race meet in September. The days will be September 25 to 28, and the management of the affair has been intrusted

to Dr. Martin, president of the Buffalo Automobile Club, and F. W. Peckham, manager of the local branch of an automobile company. The press work will be undertaken by D. H. Lewis. Efforts will be made to secure the attendance of Fournier and the leading cracks of the day.

Someone looking for notoriety last week issued a challenge, ostensibly on behalf of Fournier, to race any man in America, any distance, for any amount of money. Fournier denies that he has authorized the issuance of any such challenge. He adds that he and Charron will surely come over for the Buffalo-Erie race but asks that details of the course, prizes and other matters be sent him without delay.

Dr. O. H. Everett, of Worcester, Mass., writes, in relation to a newspaper report that he had been injured by the sudden and quite unexpected starting of his machine, that the accident was due to a collision which knocked him off the seat, and was in no sense the fault of the machine he was operating.

It is alleged that the latest Vanderbilt importation, made in Germany, was tested over a couple of miles of road at Newport last week, and made the distance at the rate of a mile in 48 seconds, or 74 miles an hour. Next day, when being driven at slow speed, the front axle broke.

A night test of an automobile has been made by the post office people at Springfield, Mass. A trip usually made by a horse in 3 h. 15 m. was made in an hour and five minutes less. The machine used was a Knox.



TO LOCATE GASOLINE MOTOR TROUBLES

People are in the habit of urging two objections to the gasoline vehicle: first, the noise, and second, the difficulties of starting the motor. The remedy of the first of the complaints lies with the manufacturers, and, to do them justice, they are making strides of gigantic proportion in the suppression of both noise and vibration. In the second case, however, no matter how carefully the motor may be made, it cannot operate successfully unless properly cared for, any more than a horse could work without food and other attentions.

The gasoline motor is a stickler for the proprieties. It demands that it be attended in just such a way and attended to at regular intervals. If, having been properly lubricated, a motor fails to work, the cause may probably be found in one of the following causes: The gasoline pipe or vaporizer may be partly filled with dirt; the gasoline of low quality; the batteries weak; the battery wires broken or short-circuited; carbon may have formed on the platinum points; the insulator may be short circuited; the inlet or exhaust valves leaky; or the piston rings weak or worn out.

In a general way the following rules may be followed with success. If the precautions advised fail to make the motor operate successfully, there must be something unusual the matter, and attention should be given the machine by a well-posted, practical automobile machinist, unless you are mechanic enough yourself to locate and remedy the trouble.

Before attempting to start, see that your gasoline tank is full of good gasoline. Don't think you know it, but know it by testing. See that the gas or gasoline reaches the engine. Notice if the valves work freely. Push them in with your finger; if sluggish, oil; or if gummed up, clean with gasoline or kerosene.

Test the plug; do not do this by detaching the secondary wire from the plug and endeavoring to get a spark between it and the engine. If you do, there is lia-

bility of short-circuiting the secondary winding of the spark coil, should the break be too long for the current to jump from the wire to the engine, and in that event the snap or jump will take place inside the coil. While a few such occurrences might not injure the coil, a continuance of this method of testing will, without fail, form a carbonized path between or through the insulation in the coil, and thereby produce a lead for the current having less resistance than the space between the two points and thereby allow the current to follow that lead instead of jumping between the points. This is what is termed a short circuit in the coil and is a common occurrence in the best of them where such carelessness in handling is indulged in.

Another reason for not using that method of testing is the example it sets to others, for while the well-informed operator might successfully make the test, one less familiar with the results likely to follow might completely ruin a good and costly coil and then blame the coil for giving out. An ounce of prevention is worth pounds of cure.

A far safer and more satisfactory manner of making such a test is to take the plug out, lay it on the engine, and then, by breaking the primary circuit in the regular manner, see whether there is a spark. If no spark takes place, the cause may be that the switch is off, the batteries exhausted, wire broken loose from binding post, carbon formed on the plug, or dirt or oil has prevented the primary circuit from being formed through the circuit breaker. If the switch is off, throw it on; if the batteries are exhausted (always carry an instrument for testing purposes), replace them; go over the wires and see that no connections are loose; if the insulator is covered with carbon, clean well with emery cloth, taking care in cleaning the platinum points. Also clean primary circuit breaker contact points in same way.

After these precautions have been taken, make another test, and you will undoubt-

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edly get a spark at the break, unless the wires have been incorrectly connected. If this has occurred, remedy the mistake and test again until you are sure the ignition apparatus is right. Then replace plugs and connect secondary or plug wires securely.

Now proceed to try the engine again, and if it then fails to run, the cause may be lack of or too much gasoline, and the vaporizer should be given attention and careful regulation until a combustible charge is produced. The atmospheric changes must be taken into consideration in order to derive best results, for there is no carbureter made that will automatically adjust itself to humidity and temperature and quality of gasoline. These things the operator must learn to combat by experience, but it is not such a difficult matter when the vaporization of gasoline is understood. In cold weather gasoline does not vaporize as readily as in warmer weather; therefore it is a good plan to draw the air from about the cylinder or run it through a coil around the exhaust, in order to heat it. This will insure a combustible mixture. Too heavy a charge of gasoline will make the force of the explosion light by reason of the combustion taking place slowly, while too light a mixture will make the force of the explosion light because the charge contains insufficient heat units. As nearly as can be determined, the mixture is explosive when composed of from five to one to 11 to one parts of air and vapor, but eight to one, it is claimed, is the proportion from which best results are obtainable. As there is no exact method of ascertaining just what proportions of vapor and air are being used, the operator is left to learn at what point the motor will give the best results, and regulate it accordingly, taking note each time of atmospheric conditions for future reference.

If the motor is water jacketed, see that the water is always free to circulate before starting; also that the tank is full, otherwise a hot cylinder is likely to result and stop the engine by reason of the cylinder oil burning, thereby causing the piston to choke. Remedy this by allowing the motor to cool, then allow water to run in slowly until the water jacket is

full. Then lubricate well and turn wheel around a few times to be sure the lubrication is thoroughly accomplished. This cause of stoppage is liable to clog the inlet and exhaust valve passages or seats with burned oil so that they will not seat regularly, and to cover the end of the spark plug to such an extent as to prevent the spark from taking proper effect, causing it to jump at other points where it will not generate sufficient heat to start combustion.

Back firing is caused in most cases by the spark being timed too early, or having become out of adjustment, or by the cylinder becoming hot, which would cause the mixture to explode when the compression reached a certain point on the compression stroke. Remedy this by regulating the timing device, by readjusting it, or by allowing the cylinder to cool.

If the engine pounds when running, there is a loose bearing. Make the adjustment as soon as possible, to avoid unnecessary wear and possible damage by reason of the parts coming apart. If it pounds when starting, it is most likely because the spark is timed to take place when the compression is too high. Remedy this by changing the spark so as to take place when the compression is lessening. This will reduce the force of the combustion and thereby enable the vehicle to get under headway at more even speed and without unnecessary vibration. This applies particularly to motor cycles.

If the explosions lack power and the remedies suggested above do not prove effective, the piston rings may need replacing, more lubricating oil may be needed, or the valves may need cleaning or replacing.

If smoke is emitted from the exhaust, it may be because too much cylinder oil is being used or because the mixture is too heavy. See to both these features and regulate until smoke fails to show. It will be almost impossible to produce a perfectly clear exhaust, however, hence a slightly bluish vapor need not cause worry.

Finally, paste these suggestion on your memory for reference:

Don't use cheap cylinder oil or steam-engine oil on your engine.

Don't fail to oil your engine every time

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you run it, and clean it up when through running.

Don't fail to see that the water is flowing properly when the engine is running.

Don't allow water to remain in the water jacket around the cylinder while the engine is idle on a cold day.

Don't allow your gasoline vaporizer or pipe to get filled with dirt.

Don't let your batteries or spark coil get damp.

Don't fail to examine your engine occasionally.

Don't make any changes on your engine or allow a so-called expert to change your engine.

Don't blame the engine at once if it don't run; look for the trouble—it may be your fault.

Don't look for gasoline leaks with a lighted lamp or match.

Remember that every manufacturer tests by indicator or brake every engine before shipment, and each moving part is carefully adjusted and set. Leave the engine alone; never attempt to take the engine apart until you have run it a while and have become familiar with it, unless absolutely necessary. Never take it apart from curiosity. An engine should be thoroughly overhauled every three months. When taking an engine apart, be careful and note the marks; if there are none, make them, so that the pieces may be returned to their former positions. It should be the pride of every engineer to keep his engine looking fine, by cleaning the outside every day, in particular all bright spots. The cylinder of an engine in constant use should be rebored every two or three years, and the rings should be removed as often as may be needed. All valves on the engine should be reground with flour of emery if they show the slightest wear. Carefully wipe them off before replacing.

Examine all springs; see if they are free from rust and gummed oil; occasionally look after your batteries. Use waterproof wire for making all connections. Pack a gasoline pump with soap and lamp wick, the water pump with oil and lamp wick. See that the exhaust and inlet passages are kept clean.

Remember that gasoline fires are easily

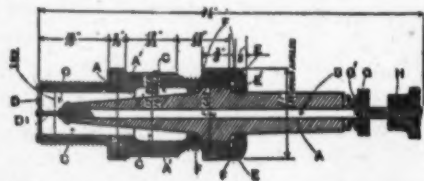
extinguished with sand or earth. If in an enclosed space it is more easily extinguished by ammonia, which should be hung up in several bottles by cords that will burn, and where the bottle may be broken by the fall.

The Northey Sparking Plug

P. W. Northey, an English gentleman with many capital letters tacked on to his name, has designed a plug in which he aims to prevent the sparking portions becoming heavily coated with carbon, which, as every practical automobilist knows, not only prevents the sparking taking place across the points by increasing their resistance, but also facilitates "shorts" along the porcelain or other insulating material of the ignition plug within the combustion chamber. By this form of plug Mr. Northey also claims to prevent self-firing due to the incandescence of the small particles of carbon so deposited when working with high compression.

The following description is taken from the Autocar:

The tapered insulating tube A A is made either of porcelain or mica. We believe mica will be adopted in the plugs to be put upon the market. Through the central hole in this porcelain or mica tube passes the metal conductor B, terminating in the bulb-headed platinum sparking point D1. The combustion chamber end of the body of the plug A1 is closed by a platinum or silver baffle D, provided with a central hole, which permits the bulb of the sparking



point D1 to protrude slightly. This hole is of sufficient size to give a clearance of 1-16 in. all round the bulb, and so gives the necessary sparking gap. The porcelain or mica, with its central conducting wire, is rigidly held in the stuffing box at the outer end of the body of the plug A1 A1 by means of the collar E1 formed thereon the locknut E E and the washers F F.

The platinum disc D forms a baffle

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plate to the exploding charge within the combustion chamber, and this charge cannot force its way more than a certain distance along the air space C C C C owing to the presence of the inert exhaust gases already present there. Consequently upon every movement of the piston there must ensue a somewhat violent passage of gas in and out of the air space C C C C through the concentric sparking space in the baffle plate around the bulb of the sparking point D. This has the effect of entirely preventing the deposit of carbon upon the sparking surfaces, and so avoiding the undesirable results of such deposits. The partial entry only of the exploded charge into the air space C C C C results in that part of the porcelain tube farthest from the sparking end keeping clean and free from carbon deposit. The water jacket through which the length marked 13-16 in. of the air space passes, also has the effect of keeping down the temperature of its contents, and consequently that of the bulb and baffle plate.

The Crease Engine Starter

The Crease Motor Starter Co., an English concern, has devised a plan to do away with the difficulties of starting an engine with two or more cylinders. An indicator is provided, says the Cycle Trader, so that the driver can at a glance discover in which of the cylinders a working charge may be ignited in which to start the engine. This indicator is numbered, for instance, 1 or 2, which corresponds with a contact device such as a switch, which is numbered likewise. As an example, if the indicator points

on the engine stopping to No. 1, all that is required is to push No. 1 switch, the charge in the working cylinder is instantly exploded and the engine started.

In cases where the engine has been at a standstill for a considerable time, and the cylinders contain no mixture fit to be exploded, a pump can be connected with the carbureter by valve controlled pipes for the purpose of enabling the working charge in any one of the cylinders to be recuperated, so that the working charge is rendered capable of being fired when the driver or attendant operates the ignition belonging to such cylinder.

With devices of this class as hitherto constructed, the surfaces of contact have been liable to become corroded or soiled and rendered ineffective on account of dust, or oil getting between them and preventing good electrical contact being made at the proper time. It is the chief object of the Crease starter to overcome these defects.

Two moveable levers or rods, form part of an electric circuit and adapted to move or slide in a dust proof telescopic casing in opposition to the action of gravity or a spring. These moveable pieces or rods normally remain out of contact with each other, but at suitable intervals are caused to come into contact and complete the electric circuit of the ignition device by a cam on the engine two to one shaft acting upon one of the rods, and pushing it against the other rod. The last mentioned moveable piece or rod is provided with means, such as a screw and nut, for enabling the position of its contact surface relatively to the contact surface of the other moveable piece or rod to be readily adjusted.



WHEELS AND TIRES FOR MOTOR TRUCKS

Some of the manifold troubles with which the maker of heavy vehicles has to contend are told by Walter L. Bodman, an English engineer, in the *Horseless Age*, in such a pessimistic strain as to lead one to the belief that the mastery of the problem of economical wheel and tire maintenance are almost beyond the power of the designer. After telling, at some length, of trials made in England and the lessons those trials taught, the writer says that apart from all considerations of speed and saving in wear and tear, the adoption of a resilient tire is commercially necessary to obtain the all-the-year-round working that business vehicles necessitate, and the coefficient of rubber being approximately 10 times that of iron or steel, it necessarily follows that that material only offers present advantages.

The consideration to the writer's mind is not the size load that can be provided for on a truck whose gross weight is not absolutely prohibitory to the fair maintenance of roads, but rather what is the largest section of resilient tire that can be made at a commercial price, and the gross load it will carry without chemical deterioration due to overloading, and the possibilities of attaching it with tolerable certainty of its working. When this is ascertained we have the needful data for the limit of size of truck manufacture.

There appears to be little doubt that rubber when overloaded is affected, not merely by the loss due to frictional wear, but also by chemical change, as evidenced by the great rise in temperature. Being impressed with the various facts enumerated above, we made an effort in Manchester, England, about three years since, to ascertain the working load per square inch of surface that a rubber tire would stand, intending to attempt a design of tire for heavy trucks. We found no manufacturer possessed of any data on the subject. We came to the conclusion, deduced from known rule of thumb practice modified by known cases of failure, that 250 pounds per square inch

of surface in contact with the road is a good working load for a solid rubber tire. This in a 36-inch wheel allows 650 pounds for every 1 inch of width able to take the load on the ground, the width at the tread of the wheel varying necessarily with the section.

The essentials of a good tire for automobile work, whether light or heavy, are:

- a. Ample width of tread, that load may not exceed 650 pounds per inch of width.
- b. Largest possible sectional area without liability to roll.
- c. Perfect fixing to prevent "creeping."
- d. Smallest possible percentage of waste material.

In the last connection the writer has seen tires that were worn down to their fixings before 40 per cent of the original weight of the rubber had been worn.

The illustration of a wheel on a gallops stand is of an experiment made in connection with the investigation above mentioned, the construction of the wheel itself being illustrated in Fig. 1. This tire measured exactly 4 inches in the tread by $1\frac{1}{4}$ inches thick. By the arrangement shown it was loaded to 3,600 pounds, the square cast iron block weighing 300 pounds and the steel yards pressing on the sliding journals having a leverage of 12 to one. The face of the pulley intended to represent the ground was transversely barred and roughened and run at a speed of seven miles per hour.

The tire proved to be somewhat overloaded, and after running 27 hours it collapsed, great strips peeling from it, as we conjectured, owing to internal decomposition. The makers, the most eminent tire-making firm in England, considered the test too drastic and seemed to think the result fairly satisfactory, and we think that had it been loaded to 650 pounds per inch of width, that is, 2,600 pounds, it would have run steadily until naturally worn out.

It appears so far that four inches is the widest tire that can be attempted, if cost of attaching to the wheel is kept in reasonable limits, and that any increase

TIRES FOR HEAVY TRUCKS.

of width above that will require to be met by attaching two or more tires to the wheel tread.

Apart from the question of adhesion, the most obvious use of a resilient tire is as an absorbent of vibration and to deaden impact, the terms being practically synonymous. So much is this the case that the writer is convinced that these factors will prove an absolute money economy in actual work; the depreciation of the truck being concentrated on the tires, in place of the vehicle showing the general signs of wear and tear in



Fig. 1. The Testing Machine.

every pin that is chronic to iron-tired vehicles, whether light or heavy, after six months' active running.

For a heavy tire, certainly it is necessary to have some fixing that shall be thoroughly homogeneous with the mass of the rubber, and not merely a mechanical method that is dependent on the skill or judgment of a mechanic. It is almost incredible what large torsional stress is put upon the driving wheel of an automobile, in addition to the ordinary load-carrying stress of a horse-drawn vehicle. So great is this that the writer has seen a wooden wheel move peripherally inside

a six-inch steel tire in a few days after the tire had been put on the wheel. This was one of the main defects that prevented the Liverpool trials of 1898 from showing satisfactory results, some of the wheels having given out after five or six miles of running.

If this is the case with a bolted tire that can slightly slip under excessive strain, some idea will be obtained of the necessity for an abnormally good fixing with a tire that is almost sure to resist the tendency to slip and will absorb the largest effort that the engine and gearing can impose upon it.

The method of fixing that we used on the experimental tire illustrated is practically perfect, but it involves the expense of molds for every size required, and the scrapping of the entire tire if any part proves defective or is injured by an accident.

The wheel is a segmental wheel, built somewhat on the style of the Maunsell railway car wheel; the segments are cut out of light, dry pine of such a size that hydraulic pressure is required to force the wheel into shape. Such a wheel is light, very cheap to build, and possessed of the highest torsional strength possible; is, in fact, an indestructible truck wheel.

The wheel represented in Fig. 2 has a disk of sheet steel with angle iron rings riveted round the edge to form a T section. This ring is laid in the mold and the tire is vulcanized permanently to it. The center of the steel plate disk is cut away, but sufficient depth is left to enable the gear wheel bolts to pass through it, so that the drive is transmitted direct to the tire and the wood part of the wheel relieved of the bulk of the torsion. It will be noticed that the inner edges of the tire are molded with a certain amount of taper or draft, and, in forcing up, the compression on the wood is calculated to put a large radial stress on the inner edges of the tire.

It will be readily seen that this method of building up a wheel and tire admits of indefinite multiplication, as in Fig. 3, which shows two of the tires side by side, making a perfectly fixed tire with an eight-inch tread, a size of fixed tire that we think has not before been equaled.

In the case of the traction engines before referred to, the tires, although very

TIRES FOR HEAVY TRUCKS.

wide (18 to 24 inches), were merely rubber rings forced over a plain iron tire and not fixed. They acted practically as a rubber roadbed interposed between the iron tire and the road, their exceptional width and mass obviating any tendency of the wheel to revolve inside them. It is apparent that even rubber of this width would have very little chance of securing sufficient adhesion in loose, fine snow, at least not for a starting effort, and it would be necessary to transversely

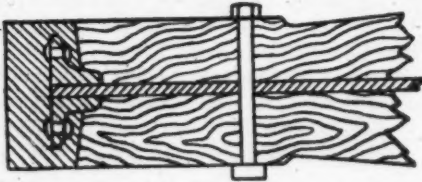


Fig. 2.

bar such a tire under such circumstances.

During the past winter the writer worked a truck of a gross loaded weight of 8,500 pounds pretty continuously in snow that was frequently a foot deep, and in a temperature that was usually below zero. This truck was fitted with sectional rubber tires, so arranged that a space of $1\frac{1}{2}$ inches interposed between every three or four inches of the tire circumference. Although in bad drifts the wheels might race a few revolutions, a few seconds' rest sufficed to allow the tires to sink into snow or ice solid enough to get adhesion, the tire being remarkably rapid in taking advantage of everything in its favor.

Any form of transport in snow-covered cities is difficult and costly, and the driv-

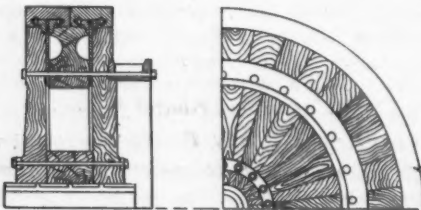


Fig. 3.

ers are called upon to exercise all their knowledge and nerve. This is probably accentuated in all automobile work, but we must certainly say that, although at times troublesome, we never saw the above truck in a position that an expert driver could not have worked himself out of un-

assisted. That the form of tire was largely responsible for this is evidenced by the fact that although light steam carriages are built that the dead and live weights are so massed over the driving wheels that the steering end is occasionally dangerously light, their pneumatic-tired wheels would indefinitely race in places the truck never winced at.

Parts Wanted in Australia

Armadale, Victoria, N. S. W., June 28.—To the Editor.—It may be of interest to you to know that we, subscribers to your paper, are pioneering the motor trade in these colonies and are meeting with splendid success with our steam vehicles, using kerosene fuel. We have now about £50,000 worth of orders on hand and shall be glad to receive from any of your manufacturers catalogues of parts suitable for making up into cars, possibly with resulting trade.—Yours, etc., Thomson Motor Car Co., E. L. Holmes, managing director.

The depreciation of factory stock in the way of machinery, etc., was never better illustrated than in the sale of the American Sewing Machine Co.'s plant at Philadelphia. This company once made bicycles, but before that was in financial straits. The machinery of the plant cost \$300,000, and the building and real estate was said to be worth another \$100,000. The entire plant was sold at auction for \$40,000.

David W. Sowers, superintendent of the Buffalo branch of the New York Electric Vehicle Co., is much pleased with the company's business in Buffalo. The company does a large livery business and is also selling electric and gasoline vehicles. The plant on Utica street is a busy place, so busy, in fact, that the company was forced to raise the price of storage from \$25 to \$50 a month.

The Automobile Storage, Inspection and Repair Station, 303 North street, Buffalo, which is close by the Buffalo Automobile Club, is preparing to look after visiting automobilists thoroughly. This company was recently appointed local agent for the Automobile Blue Book.

The Eastman Metallic Body Co. has just issued a folder of interest to the trade which can be had for the asking.



FROM CORRESPONDENTS



East Weymouth, Mass., July 22.—To the Editor:—I have made three motor-cycles and have had good luck with everything except batteries. Some of them will run the motor 400 miles, and others about 175. The average, without a stop, has been about 20 miles. Then they seem to play out. I give them a rest and repeat the performance. The greatest expense in running the machines has been in keeping up the batteries.

In a recent issue of the Age I saw the Vesta accumulator described and it impressed me as about the thing I need. I shall be pleased if you will give the name and address of the maker.—Yours, etc., W. F. Sylvester.

(The short life of the batteries may be due to their original quality and price, or it may be that the batteries are all right and the handling they receive is all wrong. The insulation of wires must be perfect. If the contact on the cam is larger than necessary, it wastes power, draws more current than the battery will stand and weakens it. It then has to rest a while. The best remedy is to have the wiring tested by some one who knows electricity thoroughly; then equip the machine with the best battery to be had and of sufficient power. Three of the ordinary dry cells are not strong enough. A circuit cut out should be used to prevent waste, and a plug, as an additional safeguard. The Vesta Accumulator Co. is located at 53 Dearborn street, Chicago.—Ed.)

Doesn't Believe in Steam

La Crosse, Wis., July 29.—To the Editor:—I have just read a letter from a correspondent and the opinions of makers of automobiles on the subject of club tests in your last issue. Your correspondent wants to know a lot of things which a lot of other people want to know, but

which they cannot easily find out. In other words, the makers of steam vehicles do not seem to be able to tell them. I was impressed by the fact that of all the makers of steam carriages who replied to your request for their opinions on club tests, only one was in favor of them. The gasoline men, on the other hand, were either favorable or expressed no strong objections to them. What is the natural inference?—Yours, etc., G. W. West.

An Engineer, But Negligent

Northampton, Mass., July 27.—To the Editor:—In regard to the newspaper article about my automobile difficulty, I would say that the trouble was mostly newspaper talk. My machine is the Locomobile, and is in every way most satisfactory. The trouble was caused by the fouling of the gauze in the gasoline feed tubes, of which I was aware before starting. The trouble increasing, I was obliged to abandon the machine, as it was necessary for me to complete the trip at once. Rather than be delayed I sent it back by team. I am using the machine between 200 and 300 miles a week, over rough country roads, in my business, with perfect satisfaction.—Yours, etc., E. E. Davis.

Correct Version of Alleged Explosion

Cleveland, O., July 25.—To the Editor. —The press notices concerning the recent fire which occurred in our store were entirely false and distorted in every particular. There was no explosion whatever, and the cause was a simple one, the accident being due entirely to some one having tampered with the carriage unknown to ourselves and having broken the check down and loosened the valve controlling the gasoline supply. As a result, on our Mr. Eyster's attempting to

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adjust the valve it unscrewed in his hand and the gasoline was allowed to flow unchecked from the tank. The fumes consequently became ignited. On his attempting to stop the flow of gasoline he did not step aside quickly enough, and was enveloped in the flame.

As we have just stated, there was no explosion whatever, and as the services of our fire department were extremely prompt, the fire was confined practically to the gasoline remaining in the tank of the machine. Of course, Mr. Eyster's injuries are very painful and his condition is serious, but as he is daily improving we have hope of his early recovery.

We trust this explanation is sufficiently comprehensive, and we wish to assure you that the accident was due to no fault of the carriage whatever. We trust you will be able to correct the general misunderstanding which seems to prevail.—Yours, etc., American Bicycle Co., Rambler Sales Department.

Asks About the Oldsmobile

Kenwood, N. Y., July 25.—To the Editor.—A remarkable thing about your paper is that it appears to favor the consumer or buyer. On this account I venture to make a couple of inquiries for it is very difficult for buyers to obtain disinterested information. The Olds Motor Works, of Detroit, issues a little catalogue illustrating almost incredible things done with the Oldsmobile. Does the machine give satisfaction? It has but one cylinder. Is it possible that the machine is fairly free from vibration?

Does the Marsh motor bicycle give satisfaction?

It would seem as if some explanation were due the public from the Haynes-Apperson company as to Mr. Gardner's vehicle. We are left with the impression that Mr. Gardner was given a defective vehicle and Mr. Apperson did not deny it. Still, a friend of mine has one of the larger vehicles and is highly pleased with it.—Yours, etc., J. S. Freeman.

(The Olds company commenced turning out vehicles only a few months ago owing to a disastrous fire at the factory. Few samples, therefore, have reached Chicago, but, judging from personal observation and from the opinions expressed by

other users, they have been quite satisfactory. They are free from noise and vibration to a remarkable degree. Our correspondent doubtless refers to the egg-cracking and other tests shown in a series of photographs issued by the makers some months ago, all of which are quite possible with a vehicle in the hands of an expert operator. The Marsh motor bicycle has not yet reached Chicago and no attache of this paper has had an opportunity to test one to such an extent as to warrant the expression of an opinion. Nothing can be added to the opinion expressed in these columns at the time of publication of Mr. Gardner's letter, namely that his experience did not tally with that of other users of the same machine.—Ed.)

Only a Misunderstanding

Grand Rapids, Mich., July 3.—To the Editor.—In looking over your design for a bicycle motor I find what I think is a mistake. In article 2, figure 5, you show shaft inserted in fly wheel but the shaft is on wrong side of the wheel.—Yours, etc., S. E. Purdy.

(Merely a misunderstanding on the part of Mr. Purdy. In one drawing it happened that the view was taken from one side of the motor and in another from the opposite side. With this explanation he will no doubt find that the drawing is correct.—Ed.)

Trouble Due to Skidding

Attleboro, Mass., July 22.—To the Editor.—While riding down a long hill, recently, at full speed, I ran into a portion of the road which was very slippery from mud. To get to a better part of the road I turned toward the sidewalk. The hind wheels slipped, and before I knew it, the front wheels had run into the sidewalk. The chain broke when the wheels struck the curb, which was about 10 inches high. The only damage to the carriage was one badly bent front axle and a slightly bent rear axle which speaks well for the machine, an Orient.—Yours, etc., J. W. Battershall, M. D.

Defects and Their Remedies

Chicago, July 27.—To the Editor.—My experience with steam vehicles has brought out the following defects: Uncertain water registration, breaking of

FROM CORRESPONDENTS.

the reach, catching of check valves, insufficient pump service, galling of pinions on the differential and corroding of the by-pass.

To overcome the difficulty with the water registration I inserted globe valves instead of checks at the gauge and boiler. This improved the fluctuation of the water but was severe on the glass. I am now using Barclay valves. To repair the break in the reach I brazed a much longer inner sleeve into the tubing without taking away the pivot. The trouble with the check valve was only temporary and it had to be unseated. The pump seems to be insufficient for the work required of it. The auxiliary is good but the steam pump seems to be the solution of the problem. The galling of the pinions is due to the small oil hole and to exposure to dust. My last source of trouble was the corroding of the by-pass point, which must be attended to and kept bright to avoid trouble.—Yours, etc., C. L.

Two and Four-Cycle Engines

Jamestown, N. Y., July 26.—To the Editor.—Will you please answer the following questions:

Can a two-cycle, double-cylinder motor be operated as satisfactorily as a four-cycle, with the ignition and balance of outfit described in your Construction of a Gasoline Motor, in connection with the carriage described in your book?

How is the motor throttled or governed when running light and carriage standing still?—Yours, etc., Buffalo Indicator Co.

The question has been referred to the writer of the book mentioned, who makes the following reply:

Chicago, July 29.—To the Editor.—Few experts advocate the use of any type of two-cycle motor for motor vehicle purposes. Weight for weight, the Otto or four-cycle motor is as powerful and reliable, and more efficient. The two-cycle motor, while greatly in use for small units of power, cannot be recommended for either speed, power or efficiency, as compared with the four-cycle motor. The writer has before him the catalogues of two or three makers of two-cycle marine motors. In all of these the state-

ment is made that the two-cycle motor's most obvious advantage, outside of its simplicity, is the fact that, weight for weight and dimension for dimension, (bore and stroke), the two-cycle motor should and will develop twice the power of a four-cycle motor. These statements are broad and cannot be carried into effect in actual practice, for reasons which are not within the province of this answer. Appended are tables taken from the makers' catalogues, giving dimensions, horsepower, speed and weight of two and four-cycle motors:

TWO-CYCLE.

Horse Power.	Bore and Stroke.	Rev. per Minute.	Weight.
2	4 x 4	450	250
3	4½ x 4½	420	360
4	5 x 5	400	450
6	6 x 6	350	680

TABLE NO. 1.

TWO-CYCLE.

Horse Power.	Bore and Stroke.	Rev. per Minute.	Weight.
1½	3½ x 3½	375	230
2½	4½ x 4½	360	302
4	5 x 6	340	558
6	6 x 6	330	795

TABLE NO. 2.

FOUR-CYCLE.

Horse Power.	Bore and Stroke.	Rev. per Minute.	Weight.
1½	3 x 3	600	156
2	4 x 4	540	200
3	4½ x 4½	480	260
4	5 x 5	450	340
6	6 x 6	420	440

TABLE NO. 3.

FOUR-CYCLE.

Horse Power.	Bore and Stroke.	Rev. per Minute.	Weight.
2¾	3 x 3	1800	95
3	3½ x 3½	1500	135
4	4 x 4	1200	185
5	4½ x 4½	1000	230
6	5 x 5	900	310

TABLE NO. 4.

They are an exact copy of the tables given in the builders' catalogues. Table 3 shows what may be called medium speed, and No. 4 high-speed motors of the European type, having the flywheels in the crank chamber.

The writer has seen motors of some of the sizes given in tables 3 and 4 in operation, and brake tests made on same. Several large eastern concerns who are fitting out yachts, auxiliary cruisers and fishing yawls with motors, invariably

FROM CORRESPONDENTS.

use the four-cycle type, in spite of its added mechanism. Next to the car coupler and rotary steam engine, the writer knows of nothing upon which more mechanical energy and money have been expended than the two-cycle motor. But if weight, speed and efficiency are to be taken into consideration, the writer would say, let the two-cycle motor alone.

The control of the motor illustrated and described in the work entitled *The Construction of a Gasoline Motor Vehicle* is illustrated in Fig. 2 in the second article in the book, and its operation and adjustment fully described on page 114. —Yours, etc., L. Elliott Brookes.

Prices of Steam Vehicles

Rochester, N. Y., July 25. To the Editor.—We notice that the Locomobile company will advance prices, dating from August 1. We do not think the general public realizes the large cost involved in the production and marketing of automobiles. It is an article that requires the most expert of labor and the greatest of care in construction, inasmuch as the majority of them pass into the possession of people who are themselves only superficially educated in the workings of steam engines and for that reason the automobile manufacturers are put to great expense in order to simplify and at the same time combine features of utility. We are producing a machine that is the equal of anything in a steam carriage on the market and have felt right along that our machine was worth more money than we are getting for it. That, coupled with the fact that there has been a general advance in the wages of machinists all over the country, makes it imperative for all automobile manufacturers to sit down and figure just where they are coming out. We have not decided to advance prices, but should we decide to do so in the near future, we shall notify you promptly.—Yours, etc., Rochester Cycle Mfg. Co.

Geneva, O., July 24.—To the Editor:—The advance of the price of Locomobiles will have no effect on us whatever. We started out to supply the American public with a first-class steam carriage at \$750, and from the way we are receiving

orders we are of the opinion that this is the popular price, and are satisfied that a good steam carriage can be marketed successfully at this price.—Yours, etc., The Geneva Automobile & Mfg. Co.

Prices for Next Season

Waltham, Mass., July 29.—To the Editor.—About a year ago we announced that we would manufacture a motor bicycle and a few weeks later the Orient, America's first motor bicycle, made its appearance, and its popularity has gradually increased ever since. After a year's experience it stands to-day not as an experiment, but a thorough practical machine. We believe that motor-cyclists are not only better satisfied, but much more enthusiastic over their mounts than are the users of any other class of self-propelled vehicles, and the only reason that they have not yet come into more general use is on account of the price. After using our best endeavors for the past year we have been able to standardize the parts, thus reducing the cost of manufacture, and we shall give to our customers the benefit of this in a lower price next season.

Ordinarily the months of August, September, October and November are "dead ones" in the bicycle business, and we may add that this enforced idleness for several months has proven one of the most serious drawbacks to the bicycle manufacturer. We do not see why it should be so with the motor cycle builder, and so far as we are concerned we do not propose that it shall be so, and instead of waiting several months to announce our 1902 price we propose to start in the new year on our 1902 basis the day after the old one is closed. August 1 is the beginning of our fiscal and agency year and on that day we shall institute our next year's prices and terms, which will be as follows: Motor bicycle, fitted with $2\frac{1}{4}$ horsepower Aster or De Dion motor, \$250; motor quadricycle, convertible into a tricycle, fitted with $2\frac{1}{4}$ horsepower Aster motor, \$375; runabout, fitted with 5 horsepower motor, \$850; Victoriette, fitted with 5 horsepower motor, \$1,200. The above are our 1902 prices and will continue in force until August 1, 1902.—Yours, etc., Waltham Mfg. Co., W. D. Gash, Mgr.

CONSTRUCTION OF A BICYCLE MOTOR

PART SIX.

The mixing valve is shown in Figs. 28 and 29. The former gives an elevation and a plan or top view, and the latter is a sectional elevation of the mixing valve, enabling its interior construction to be clearly seen and understood. This mixing valve requires a nice pattern to be made for the body and for the cap which goes into the bottom of the body. The body and cap can be made of either malleable iron or brass,

but the writer prefers the former for several reasons. It is easier to machine and is not so easily affected by the corrosive action of gasoline as brass or bronze, on which a bright green, slimy deposit (arsenate of copper) will accumulate at every point where the gasoline comes in contact with the metal. More frequent cleaning and taking apart are necessary when brass or bronze is used.

The gasoline is admitted into the valve body through the needle valve opening at the upper portion of the valve shown in Fig. 29. When the needle valve has been properly adjusted the lock nut is tightened down upon the steel washer directly beneath it. This, in turn, has a soft copper washer under it, which should be a snug fit upon the thread of the needle valve. It makes a

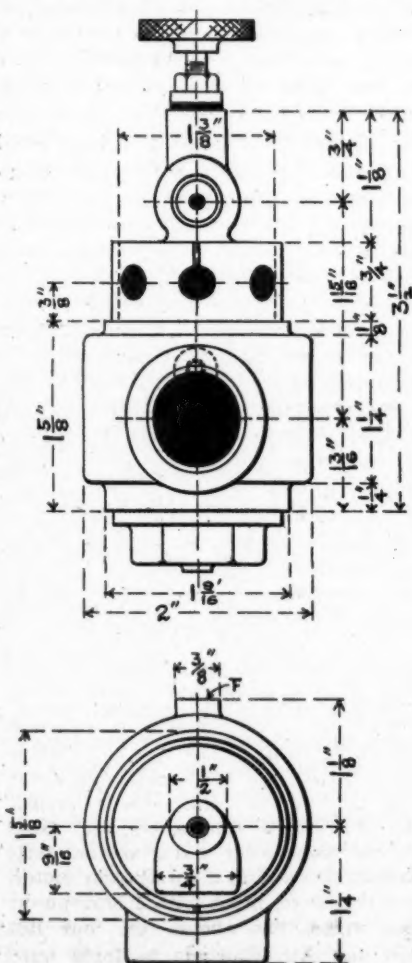


FIG 28. MIXING VALVE.
One, complete.

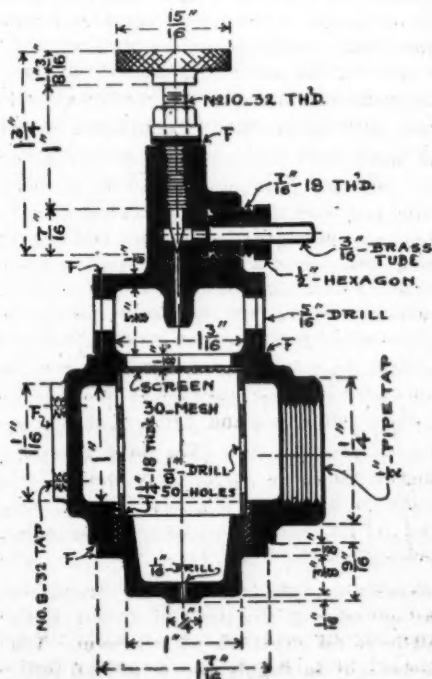


FIG. 29. MIXING VALVE.
Sectional elevation.

CONSTRUCTION OF A BICYCLE MOTOR.

perfect joint and no leakage is possible if properly fitted as described.

The 3-16 of an inch brass tubing which connects the mixing valve with the gaso-

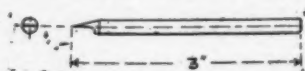


FIG. 30. TAPER REAMER.
One, tool steel

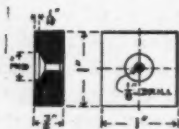


FIG. 33. GASKET MOULD
One, steel.

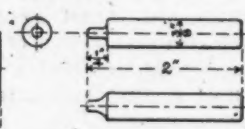


FIG. 31. FLANGING TOOLS
One each, tool steel.

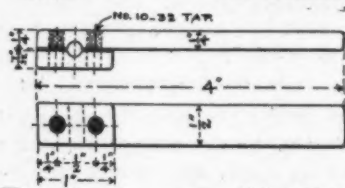


FIG. 32. PIPE HOLDER.
One, complete, steel.

line tank has flanged ends, which are securely held between a lead washer and bushing shown in Fig. 29. The action of screwing in the bushing forces the flanged end of the gasoline pipe or tube into the face of the lead washer or gasket and makes an absolutely tight joint. This form of connection is a trifle more expensive than some now in use, but when made is a much more satisfactory job. The lead washer or gasket can be renewed, when occasion requires, very easily and quickly. The bushing which holds the flanged end of the gasoline pipe in place can be made of either $\frac{1}{4}$ -inch hexagon brass or steel. A 7-16 18 thread is cut upon it, and the inner end of the hole through which the gasoline pipe passes should be flared, as shown, to fit nicely over the flange of the pipe. The connection opening for the pipe leading from the gasoline tank, for the sake of cleanliness and simplicity, is shown in Fig. 29 in line with the outlet or connection opening to the induction pipe, but may be in any direction desired by the builder. To make the seat for the needle valve, the tapping drill for the No. 10-32 thread should first be run in the proper depth, as shown, then followed up with a smaller drill about 1-16 of an inch in

diameter, which should be run clean through into the interior of the body, through the end of the nose which projects downwards into the mixing chamber.

A small taper reamer, as shown in Fig. 30, is required to form a seat for the needle valve. The body of this should be of the same diameter as the tapping drill for the No. 10-32 thread. This should be run down into the 1-16 of an inch hole to make a seat, about 1-16 of an inch deep, for the taper part of the needle valve. The body of the needle valve should be made of tool steel, and the thread turned off at the point as shown in Fig. 29. The head can be made from a piece of 1-inch brass rod and should be knurled on the edge, as shown. It should be made a driving fit on the stem and sweated on with a little solder, so as to prevent any possibility of its becoming loose. The opening for the 7-16 of an inch bushing which holds the gasoline pipe in place should have the tapping drill for the 7-16 18 thread first run in, and after this a 1-8 inch drill for the small hole. This should be done in a lathe to insure a perfect job. Around and outside the upper part of the mixing chamber is a ring of brass tubing which forms the air control or regulation of the valve. After the ring is fitted on this part of the chamber, eight 5-16 of an inch holes, equidistant, should be drilled around and through the ring and top part of chamber. The ring should be sawed through as shown in Fig. 28 at the center of one of the holes, then slightly compressed so as to tightly clamp itself to the top portion of the chamber when in position on the same, to prevent jarring from its position after adjustment.

Directly underneath the small nose or nozzle, through which the gasoline enters the mixing chamber, is a wire screen of 30 mesh, which can be of brass or steel, preferably steel, for reasons before stated. This screen is held in place by a tube, which can also be of brass or steel, $1\frac{1}{4}$ inches outside diameter and $1\frac{1}{2}$ inches long and about 1-16 of an inch thick. This tube has 50 $\frac{1}{8}$ -inch holes drilled in it in five rows of 10 holes each. These rows should be staggered alter-

CONSTRUCTION OF A BICYCLE MOTOR.

nately, as shown. Only three rows consequently show in the cross section in Fig. 29. This ring and screen are held up tightly against the under side of the shoulder shown directly below the air openings, by the cap in the lower end of the valve body. This tube and screen should not be omitted from the mixing valve if good results are required, as it has the effect of thoroughly combining or mixing the air and gasoline. After the air is drawn into the mixing chamber of the valve through the eight 5-16 of an inch holes, it picks up the gasoline which has dropped upon the screen in its passage through the same. The air and gasoline, thus partially combined, then pass through the small holes in this tube and around the outer portion of the chamber into the induction pipe leading to the motor, thus thoroughly combining, and producing a homogeneous mixture. This is not possible in most types of mixing valves the writer has seen in use. The body of the mixing valve, if made of brass or bronze, should be well nickel-plated, particularly inside, to prevent corrosive action of the gasoline, as nickel is almost immune from this disease. The cap which goes into the bottom of the body has a hexagon with one inch flats. This should be made a nice screwing-in fit on the $1\frac{1}{4}$ 18 thread portion, so as to be easily removed if occasion should require it.

A small hole is drilled in the bottom or hexagon part of the cap, as shown. This is to allow of adjusting the needle valve by counting the drops when setting the same. It is also useful to keep the lower part of the body free from sur-

plus gasoline, as the slight air suction through this opening tends to carry it into the induction pipe leading to the motor.

Fig. 31 shows the tools required to form the flange on the ends of the gasoline pipe, which connects the mixing valve to the gasoline tank. Fig. 32 is the holder for clamping the end of the 3-16 brass tubing in and holding the same by while flanging the ends in the lathe. The lower of the two tools shown in Fig. 31 is first used to flare the mouth of the tube with. It is held in the lathe chuck and the pipe held in the holder shown in Fig. 32 pressed against the nose of the tool while the tool is in motion. It must be run at a comparatively high speed. After the mouth of the tube is flared, the upper tool shown in Fig. 31 is used in the same manner to flatten out the end of the tube and complete the operation.

Fig. 33 shows a small disc or mold with which to make the lead gaskets. Lead about 3-16 of an inch thick should be used and punched out into circles $\frac{3}{4}$ of an inch diameter, then placed in the mold and formed into shape with a hammer. After forming into shape, the mold with gasket in it can be turned upside down on table of drill press and the $\frac{3}{4}$ of an inch hole drilled through it. The upper face of the gasket should then be filed off level with the top face of the mold before removing it from the same.

The muffler is shown plainly in Fig. 34. The center tube is of $\frac{3}{4}$ -inch wrought iron pipe and threaded on its ends as shown. The end covers can be made of

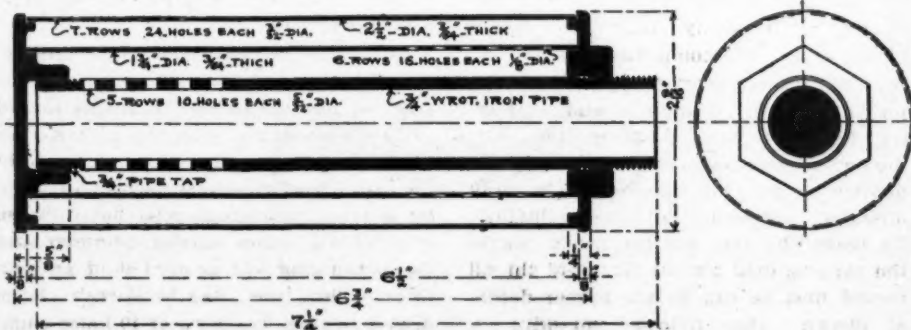
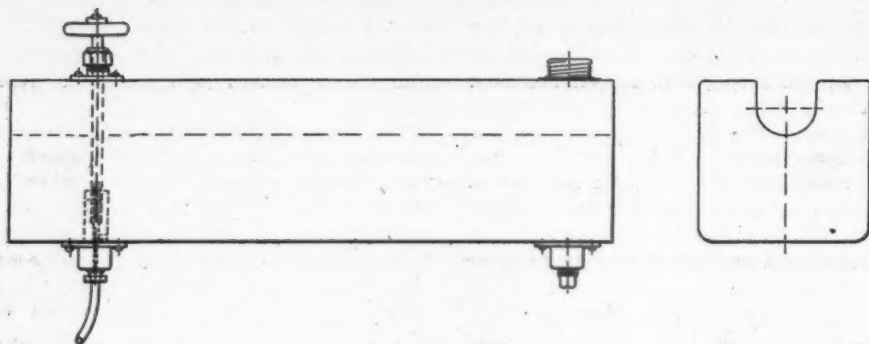


FIG. 34. MUFFLER.
One, complete.

CONSTRUCTION OF A BICYCLE MOTOR.



GASOLINE TANK.
One, complete.

aluminum, for lightness' sake. One end of the center pipe is screwed into the cover shown at the left hand side of the drawing, and the $2\frac{1}{2}$ and $1\frac{1}{4}$ inch outer tubes are held on the shoulder rings upon the covers by means of the lock nut upon the cover at the other end of the muffler, as shown. The holes in the three tubes should be drilled as shown and to the dimensions given in the drawing. Each alternate row of holes should be staggered, so as to leave the tubes as strong as possible.

Fig. 35 shows the gasoline tank. No dimensions are given, as these depend upon the requirements of the case. A needle valve to shut off the gasoline from the mixing valve when the motor is not in use, is shown; also removable plug for drawing off gasoline if it is of too poor quality or old.

These are desirable features for motor bicyclists' use, as the writer has frequently observed. On one occasion an acquaintance of his, who was the proud possessor of a motor bicycle, had to remove the tank from the frame of the machine to get out the gasoline on account of his

mixing valve stopping up. There was no other handy way of stopping the flow of gasoline from the tank when the mixing valve was removed, except with his finger. If the machine has not been in use for some time and has been left with gasoline standing in the tank, there is likely to be an accumulation of a jelly-like substance in the bottom, or from long usage, without cleaning, the same thing will occur. Under such circumstances, by means of the removable plug in the opening in the bottom of the tank, the gasoline can be readily and quickly emptied, the plug put back, and the filling cap removed and the tank thoroughly cleansed with a solution of boiling hot water and borax. The tank should be rinsed with a little left-over gasoline after cleaning with the borax solution, before putting in the fresh gasoline, to remove all traces of the water used in the cleaning process.

The next article will give details of the shut-off valve and removable plug parts for gasoline tank, motor supporting frame, motor driving pulley, and belt tension device.





CYCLE SPORT AND TRADE



At last, after he has been repeatedly attacked by the best riders the world affords, Harry Elkes has been defeated by one of his own countrymen. The event occurred at Manhattan Beach on Saturday, when Elkes, apparently ridden to a standstill by Walthour, gave up in the 38th mile and retired from the contest. It is just to the great rider, however, to remark that he had ridden a 50-mile race the day before and had traveled all night to make good his engagement at the beach, and certain it is that he showed signs of troubles which are entirely foreign to his style.



His defeat occurred in a 50-mile, four-cornered race, in which the competitors were Elkes, Walthour, Moran and Ross.

In the first mile Elkes had the lead, with Moran, Walthour and Ross in the order named. The opening mile was run at such a fast clip that a new world's record of 1:33 3-5 was established. For the first time in a race of this kind Elkes was passed, and the one who did it was Moran. Elkes regained the lead in the fifth mile, with Moran second, and they rode in this order until the eleventh, at the finish of which Walthour took second place, with Moran third and Ross last, several laps behind.

During the riding of the 17th mile Walthour shot into the lead. Elkes lost his pace a moment later and fell back. In the 20th mile Walthour again passed Elkes, which made him one lap to the good. At 31 miles Walthour had two laps on the Glens Falls rider, and in the next mile gained a third lap, which gave him a lead of one mile.

Moran in the meanwhile had lost a couple of laps, but at this point he began to gain on Elkes, and at 36 miles the Chelsea man took second place, while

Elkes was in evident trouble. At the finish of 37 miles Elkes quit, being then seven laps behind Walthour and two behind Moran, with Ross struggling along, sometimes without pace, badly in the rear.



When they had been riding one hour, Walthour had ridden 37 miles $2\frac{1}{2}$ laps, equaling Elkes' record made on the same track. Walthour finished the 40th mile in 63:44 4-5; beating Elkes' time of 65:50 3-5, made one week ago.

With 47 miles traversed, Walthour met with an accident which caused him to lose about half a lap. The crank on the left side of his wheel broke off, leaving the toeclip attached to Walthour's foot. He only lost half a lap by this mishap and finished seemingly without effort almost six laps in front of Moran.

Moran completed the 50 miles before he stopped, but little Ross was allowed to cease his labors when he had still some three miles to go.



Kramer and Taylor met in the final heat of the half-mile circuit championship and treated the spectators to an exhibition of the French style of riding. Neither man seemed anxious to get away from the starting line, and in the first 30 seconds neither one had gone 30 yards. When it came down to the question of a sprint, however, Taylor finished like a whirlwind, beating Kramer at the tape by a few inches, after an exciting race.

The result of Taylor's victory was a storm of indignation in the camp of a clique of white circuit chasers with whom he is unpopular. A relative of Kramer's went to Taylor and offered to bet him \$500 that Kramer could beat him. Brady accepted the challenge on behalf of Taylor and McFarland came to the front as

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the man who would back Kramer. For an hour there was a futile argument with huge rolls of money used in gesture in front of the grand stand. Kramer wanted to ride in mile heats unpaced. Taylor wanted a paced mile, a mile unpaced, and a toss for the style of the third. Taylor finally gave in and the forfeit was posted.

Brady offered a purse of \$1,000 for the race, aside from his bet, and named Wednesday night, August 7, as the date. Kramer refused to ride at night and the money was drawn down.

The World's Championship Meeting

To the list of world's champions, must now be added those of Ellegaard, as professional and Maitrot as amateur. The final meeting took place on June 14, and 12,000 spectators assembled at the Friedenau track. In the first semi-final, Arend went ahead at the bell and started his sprint at the quarter-mile mark. He won by a length from Grogna and Schilling. In the second Ellegaard raced with Huber and Rutt and passed them in the homestretch without difficulty. In the third Keaser made two attempts at running away, but Sedil and Jecquelin caught him a few meters after he had started. In entering the homestretch the three men were even. Seidl tried to get the pole, but there being too little space, he was compelled to run on the grass. Jacquelin won. Then came the final consolation, the two heats being won by Schilling and Seidl, with Grogna best second. In the final, Seidl lost a pedal and Schilling won by a few inches.

The final was thus truly international, and really a repetition of the final of the Grand Prix, of Paris, with the addition of Schilling, who represented Holland. The others were Jacquelin, French; Arend, German; and Ellegaard, Dane. After the first lap, run at a slow pace, the four men began to battle for the leadership. Ellegaard was the most anxious for the lead and at the beginning of the third lap appeared as if about to begin his final effort. This he did not do, and when the bell rang Jecquelin sprinted ahead. The Dane went after him, and in the middle of the last turn had caught the champion of 1900. Arend and Schil-

ling were about one length in the rear, unable to gain. In the homestretch the Dane attacked Jacquelin, and the latter could do no better than keep his second position, about three-quarters of a length behind. In the last few meters the Dutchman put up a little reserve jump and beat Arend out of third place.

The enthusiasm was grand as the crowd cheered and yelled as loudly as if it had been their countryman who won. The plucky rider's long string of misadventures were ended by one of the most envied of victories.

The amateur championship was an interesting event. The semi-finals were won by Maitrot, Veytruba and Denny, each winning with comparative ease, except Denny, who had to make a strong effort to defeat Brusoni, the Italian. The final of the consolation race was won by Struth, and thus the four winners represented France in the person of Maitrot, America by Denny, Germany by Struth and Austria by Veytruba. After three laps at a slow pace, the Austrian made his jump just as Maitrot was trying to get away. The two riders were neck to neck during the last lap, and the last 40 meters the Frenchman, with remarkable energy gained inch after inch, finally passing the winning post one-half a wheel ahead. Struth was third. Denny, who was in bad position at the bell, never had a chance to better it. This is unfortunate, for it would not have surprised the majority of those who watched the American during training hours, when he defeated with ease nearly all of the amateurs, and several pros like Ferrari and Grogna, had he won the event.

A tandem championship was run and Huber-Seidl and Ellegaard-Arend were in the final. A little before the bell announcing the last lap, Ellegaard-Arend, started to sprint. Going like a bullet the last lap was covered amid deafening cheers. The leaders did not gain. Entering the homestretch Huber-Seidl came up and, with a new effort, passed, just as the leading team was showing signs of fatigue. Huber-Seidl won by one length amid an indescribable uproar.

The match race between the two new champions followed, in which the French

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amateur gave the Dane a pretty good chase. Ellegaard won by a length and a half.

Previous races have been won as follows:

Professionals:—1895, Protin, Belgium; 1896, Bourillon, France; 1897, Arend, Germany; 1898, Banker, America; 1899, Taylor, America; 1900, Jecquelin, France; 1901, Ellegaard, Denmark.

Amateurs:—1893, Zimmerman, America; 1894, Eden, Holland; 1895, Eden, Holland; 1896, Reynolds, Ireland; 1897, Schrader, Denmark; 1898, Paul Albert, Germany; 1899, Summerhill, England; 1900, Didier-Nauts, Belgium; 1901, Maltrot, France.

Taylor Again a Winner

New York, July 29.—An excellent card at Madison Square Garden tonight, was marred by decisions that were contrary to the sense of justice of a majority of the 4,000 persons present, if not in direct violation of the rules of the National Cycling Association. The trouble arose with the bursting of a tire on Cooper's machine just as the pistol was fired for the first heat of a professional handicap at one mile. Under the rules the heat ought to have been restarted, but the referee permitted the men to ride out the mile. It lay in the referee's power to permit Cooper to start in another heat, and when the competitors lined up at their marks for the second heat with Cooper absent the demonstration began. Finally an official announced that the first heat would be run over.

This was the signal for a fresh outbreak. Gascoyne, Stevens and Newhouse, who had qualified in the original heat, declined to ride, as did all of the competitors in the heat, except Alexander and Mayo. The heat was only a procession, as all three qualified.

Having thus far followed rules of his own, it was supposed the referee would call the three-men heat an extra heat, and permit those who had qualified in the actual first heat to start in the final. This he refused to do, and some spectators left the building, apparently in disgust. Cooper failed to get through the forward bunch of riders in the final heat, and Hardy Downing was the winner, with Kimble second and J. Coburn third. The half-mile race of the circuit cham-

pionship series was robbed of interest by the failure of Kramer to qualify for the final heat, it being expected that he and Taylor would repeat their speed duel of Saturday. Taylor had no difficulty in finishing in front in his preliminary, semi-final and demi-final heats. Kramer led Fenn over the tape in his first heat, but in the semi-finals was unable to pass Fenn and Freeman in the last lap. Fenn won his semi-final heat from Freeman by inches after the latter had opened a gap of 20 yards in the third lap.

Taylor forced Fenn to a slow pace in the final heat, and going past him in the third lap, led for the remainder of the journey, with Fenn at his rear wheel, the latter a scant three-quarters of a length back at the finish.

Tin Wings for Cycle Racers

Salt Lake City, July 19.—One of the biggest sensations of the season was sprung on the riders at the saucer track. A. C. Strickland, the all around mechanic of the track, made his appearance just as the riders came out for their trial spins, carrying an object under his arm that looked like a cross between a wind shield off a motor cycle and the lid of an overgrown wash boiler. Behind him came Martin E. Mulvey, the genial proprietor of the track, wearing a self-satisfied smile, as if already figuring out his royalties. For the contrivance turned out to be an invention for the faster propulsion of a bicycle by the rider with the same amount of power as formerly expended.

Mr. Mulvey called for volunteers to take a chance at the new proposition. Schefski was asked to try it out, but modestly remarked that his insurance had run out.

At this moment King came forward and said: "I'll try it if it kills me. Should anything happen, break the news gently to the old folks." Strickland strapped the apparatus on to King's shoulders and waist.

As he slowly mounted his machine a unanimous cry went up from the spectators: "What a handsome angel he makes," for Billy looked as if he had grown a pair of tin wings. King did a lap in 14 seconds, bettering his usual time by two seconds.

Samuelson, seeing that King survived

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the journey, concluded to try a whirl at it himself. As he got up speed for a quarter-mile sprint his back wheel was seen to lift off the track several times. "There," exclaimed Strickland and Mulvey in the same breath, "what did I tell you?" Samuelson, by a superhuman effort, kept the wheel down on the track and managed to finish without floating off into space.

"Wonderful!" said Samuelson. "It's the greatest thing in the world."

The experiment really proved a success, according to King and Samuelson, and Manager Mulvey has ordered another set of the tin wings and proposes to pull off a race at one of the coming meetings. He claims the air resistance is reduced 50 per cent. He ought to know, for he creates a bit himself.

During the trial, Charley Turville and Gibson were seen in earnest conversation. This much was overheard: "Well, Charley, I guess I'd better cancel my order for the motors. We'll have nothing but white wings flying around the track shortly and there'll be no money here for us."

"You're right," answered Turville. "I'm going down and get an axe and break up all my machines. Guess I'll wire Clem to stay at Butte."

Some of the revised racing rules for the White Wings races read as follows:

"All wings must be not less than 54 inches from tip to tip, in order that the riders will not get mixed up with one another.

"Riders with aluminum wings set back 10 yards.

"Riders shall not flap their wings when entering the stretch.

"Any persons caught picking feathers from the wings are liable to suspension.

"The referee shall measure all wings at the start of each race.

"The starter shall use care in not puncturing a wing when firing the gun.

"Any rider caught flying around the ground will be suspended for life."

Standing of the Men

New York, July 29.—By his victory over Frank Kramer at Manhattan Beach Saturday, Taylor takes his accustomed place at the head of the championship table. Housman makes his first appearance

among those who have scored points. The record up to the close of the racing of July 27, according to official figures, is: Taylor, 13 points; Kramer, 12; Cooper, 10; Fisher, 8; Gascoyne, Fenn and Wilson, 5 each; McFarland and Freeman, 3 each; Kimble and Collett, 2 each; Butler and Housman, 1 each.

Sunday at Vailsburg

On Sunday, at Vailsburg, Bennie Munroe made his debut as a pace follower in the metropolitan district and defeated King of Newark in two straight heats in a five-mile motor-paced heat race. In the second heat he made a number of new records. He rode his first mile in 1:31 2-5, the second mile in 1:30, the two miles in 3:01 2-5, this being a flying start record. The third mile was ridden in 1:29 1-5, the three-mile time being 4:30 2-5. The fourth mile was ridden in 1:29, the time of four miles being 5:59 3-5. Munroe won the race by two laps, crossing the tape at King's side in 7:27 4-5, the finishing mile being done in 1:28 1-5.

Fifty-one riders started in the 25-mile amateur unpaced race. The first 10 miles were covered by Glasson of Newark in 23:14 4-5, a competition record. Edward Forrest, the winner, crossed the tape less than a foot in front of Harry Edwards. The time, 1:00:39, is a track record.

Racing at Salt Lake City

Salt Lake, July 24.—The saucer track management has put a week's continuous racing on the boards for this week and opened the first night to a crowd of 4,000 people, the principal event being a fifteen mile motor paced race between W. B. Vaughn of San Diego, Cal., and Chas. Turville, of Philadelphia. In the fourth mile Vaughn punctured his rear tire and the race was stopped to allow him to repair. In the 14th mile Vaughn attempted to pass Turville and lost his pace in doing so. Turville gained a lap, which he held to the tape, winning in 26:22 2-5.

The mile handicap professional was won by King, Samuelson second, Green third and Edmonds fourth; time, 2:01 3-5.

The half-mile, amateur, was captured by Eddie Smith, Beck second, Grames third and Bowers fourth; time, 1:09 2-5.

Chas. Turville went for the mile record

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on an eight-lap track and negotiated the distance in 1:31 2-5, beating Johnnie Nelson's time at Los Angeles last winter by 2-5 of a second. Harry Gibson of Cincinnati, and Clem Turville, of Philadelphia, will meet to-night in a 15 mile motor paced race.

Unpaced Mile Record Lowered

Salt Lake, July 26.—Amid the wildest applause of 2,000 spectators, W. E. Samuelson broke the world's unpaced mile record last evening. The time of the remarkable ride was 1:53 2-5 and the conditions were not quite as favorable as they might be. This breaks the record held by W. W. Hamilton, of Denver, made three years ago, at Shultz park, of 1:55 4-5. Hamilton's ride was made on a quarter-mile track, while Samuelson did his on an eight-lap track.

The wind came up just before the local man started and it was thought by nearly all those present that Samuelson would not be able to accomplish his end. A regular schedule of 14 seconds to the eighth was prearranged and the rider was coached by a megaphone.

The half was caught in 53 seconds, a little under the scheduled time and the record breaker was cautioned to ride a little slower in order to hold himself in reserve. He finished strong and expressed himself as confident of being able to accomplish the feat again at any time.

Beside the watches held by the three official timers several of the other officials and many of the spectators were prepared for the event, making a total of perhaps 30 watches. A claim for the record was forwarded to Chairman Batchelder last night and when received will add one more world's record to the long list already held by this famous track.

Hart's Business Incorporated

Philadelphia, Pa., July 29.—H. B. Hart, the veteran Philadelphia cycle dealer, who was the first man to engage in the business in the Quaker City, and who has recently been combining that and the sale of automobiles here, last week made a change in his affairs. The Hart Cycle & Automobile Co. was incorporated last Tuesday in Camden, N. J., with a capital of \$50,000. Josiah G. Reeve, of

Camden; Samuel H. Avis, of Palmyra, N. J., and Gertrude Hart, of this city, were the incorporators.

Patee Company Embarrassed

For some time there have been rumors that all was not as well as it might be with the financial condition of the Patee Bicycle Co. The company purchased some months ago, the old Central plant at Indianapolis and it has been supposed that this was too great a strain on its resources. At any rate a receiver has been appointed and the creditors have been asked by representatives of the Goodyear company, Manhattan Storage Co., Chicago Handle Bar Co., and Indiana Chain Co., to place their claims in the hands of one firm of attorneys with the intention of enabling the company to pull through its difficulties. Ample extension is asked for and will probably be granted by all of the creditors. Patee expects to secure additional capital.

Meeting of Ripper's Creditors

The Ripper Cycle Co.'s creditors met in the office of Referee in Bankruptcy Hotchkiss, in Buffalo, Monday morning. The Ripper concern failed about a year ago, this being the second failure. Several creditors stated to an Age man who was present that Mr. Ripper would not be able to start up again if they could prevent it. It is reported that the Ripper Cycle Co., sold bicycles the last few months at a price that would not pay for the raw material used in their construction.

When the case came up the attorney for the principal creditors asked Judge Hotchkiss that a trustee be appointed to administer the affairs of the bankrupt and to report in a week. Mr. Ripper was present and did not offer any objection, so the well known mercantile agent, A. N. MacNabb was appointed. Mr. Ripper is now running a restaurant on Main street in his wife's name. Mr. MacNabb thinks that Mr. Ripper will not be able to start business again although the latter told a representative of this paper, two weeks ago, that he would do so, as a manufacturer of jobbing machines.

Among those who will lose are many local Buffalo concerns, among them be-

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ing W. Penseyres, once connected with the Globe Bicycle Co., who built the frames for Mr. Ripper and stands to lose \$1,000.

American Motors in England

Brown Bros., the largest English cycle and automobile supply house, who do a great amount of business with America, are importing an American motor and applying it to a bicycle of English make. The result is a machine very similar to the Thomas except that the motor is placed lower on the frame. This is the second case of importation of American goods of this kind, even in this early stage of the industry, indicating that the English have learned something from their experience with American bicycles and do not desire or intend to be caught napping a second time by reason of a little foolish pride.

Coaster Brake Popularity

The coaster brake has taken a decided hold of the riding public and next year's bicycle will demonstrate that fact to a larger extent than ever. The eastern cities have taken to the coaster brake enthusiastically and the woman rider, who was somewhat shy of it is now its most ardent supporter. The manufacturers of coaster brakes in the east are making plans for an increased output. The Eclipse Mfg. Co., makers of the Morrow, recently gave an order for 2,000 tons of steel. The Eclipse company was fortunate in placing its order early, for if the strike continues it will undoubtedly force the price up. There is hardly a coaster brake house that has not made money and the Eclipse company has undoubtedly led in that respect as its shipments, domestic and foreign, have been large. A brake that is well spoken of now is the New Departure. Any defect there may have been in the earlier productions has been overcome.

Moomey Tire Patent Sold

W. H. Whitehead, manager of the Lake Shore Rubber Co., of Erie, Pa., which manufactures a general line of rubber goods, including tires, has purchased the Moomey inner tube patent, illustrated in this paper last week, which is said not to conflict with the Tilling-

hast patent. Mr. Whitehead, when seen by a representative of this paper, stated that he had no fear that his patent was an infringement for the reason that the ends of the inner tube were not vulcanized. The patent was granted Mr. Moomey in an incredibly short time, without reference. Mr. Whitehead purposes pushing the sale of the tubes and is arranging to manufacture on a large scale. This same J. G. Moomey, by the way, recently secured a patent on a carriage tire and is one of the most prolific inventors in his line.

Motor Age will be pleased to place any of its readers who want to buy anything in the automobile or cycle line in communication with reliable people who have the goods for sale.

Ralph D. Webster, of the Eclipse Mfg. Co., Elmira, has done yeoman service for the League of American Wheelmen in central New York, and at the recent semi-annual L. A. W. meet in that city, Webster and his committee succeeded in wiping out the debt of the division to the parent body and arranged a splendid time for visitors, among whom was an Age representative. The local club, which is flourishing, strange to say, these degenerate cycle-club times, owns a nice country clubhouse in addition to its city rooms, and entertained the president of the L. A. W. and the rest of the officers at that place during the meet. President Earle and Secretary Bassett journeyed to the country club in an express wagon, just to show their democracy and retrenchment habits enforced by the shrinkage of membership.

Philadelphia is the only large eastern city which is not running off a schedule of paying bicycle race meets. With one of the fastest tracks in the country, it seems impossible to induce anyone to back a race-promoting venture. Possibly Woodside Park track is too far from the center of the city, but at that the spending of less than \$5,000 would lay a good Coliseum track nearer the center of the city and eventually pay promoters with cash and energy enough to carry out the scheme. Two postponements and the hot weather took the sand out of those who attempted to run races earlier in the

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season. The field is an excellent one and needs but a little cultivation and a liberal use of printers' ink.

The I. A. Weston Co., of Syracuse, has had a good selling season with its lightweight racing model Champion hubs. Mr. Lands of the company, a few years ago, introduced the card system of illustrating and describing the Weston individual articles and it is doing away with the catalogue in a large measure. Mr. Lands is of opinion that if a man only wants one article he does not care to wade through a catalogue to find it and the card, always before him, gives a full description of the goods, the guarantee and the terms on which they can be bought. The Weston company has always enjoyed a high reputation and the hard work done by Messrs. Weston and Lands deserves it.

E. A. Stockton, of Healdsburg, Cal., has written as follows, to the E. R. Thomas Motor Co.: "I have no hesitancy in saying that for real efficiency, coupled with moderate cost, your motor has no equal in the west. Recently I had the pleasure of meeting Percy Young, of Oakland, as he was giving one of your Auto-Bis an airing and the performance was very satisfactory. It is the perfect auto-bicycle, light, simple, strong and full of good work that I am interested in, and hope the time will soon come when it is lifted out of the realm of sport and settled down to the profitable business of time, labor and money saving. It is what is needed in this hustling age."

An Age representative who had occasion to pass the factory of the New Departure Bell Co., at Bristol, Conn., one evening recently, was surprised to see the building completely illuminated, and every sign of active operation. He subsequently ascertained that the factory has been running nights for some time in the coaster brake department, the demands for the New Departure coaster brake being more than the regular operation of the factory could supply.

The Crosby Co., of Buffalo, the most important of all the cycle parts houses, is clearing away for action in connection with next year's trade. Mr. Crosby has also organized the Union Mfg. Co., of which he is president, and W. H. Hill,

also of the Crosby Co., is secretary and treasurer. The new concern will make grinding tools. Its factory will be located in Buffalo.

A Buffalo agent named Pfeffer, whose place of business is on Genesee street, was arrested last week as the receiver of stolen bicycles. Detectives proved that he had bought six women's bicycles from a young girl who had stolen them from the public library and had paid \$2.50 each for them. The girl and the agent were locked up and the latter is in jail in lieu of \$5,000 bail.

R. K. McLellan, manager of the Durand Mfg. Co., of Rochester, is pleased with the success of the Bullis coaster brake this season and says facilities for a larger output are now under way. The Durand company also manufactures the Genesee automatic bicycle pump, foot power and gasoline launches and canoes.

Charles A. Pace, secretary of the Bowen Mfg. Co., Auburn, N. Y., maker of oiling devices, is now in London, seeing the company's foreign representatives, and is quartered at the Langham Hotel. George W. Bowen, owner of the company, states that the business abroad has been satisfactory.

According to Orlando L. Weaver, of the automobile and motor bicycle tire department of the Goodyear Rubber & Tire Co., the company's business at this time of year is the best it has had for years. Mr. Dingman, of the bicycle tire department, is also much pleased.

Manager Murray, of the Cortland Carriage Goods Co., Cortland, N. Y., is well satisfied with the business done with the Crown coaster brake this season. The Crown is of the "back-up" kind, and is thoroughly well made. The company has also done a nice business with its Crown hub for bicycles.

Howard E. Raymond is in Europe on an important commission for the Goodrich Rubber Co., and will return some time in September. On his return it is rumored that the company will make an important announcement.

Tower & Bull, Exchange street, Rochester, report that they have done very well with their Bull stand hub repair cone. Tower & Bull claim that they

CYCLE SPORT AND TRADE.

have the only repair cone which makes a neat dust-proof job. It fits all sizes and threads of axles.

After months of waiting it is said that two of the automobiles which are to run between Urbana and Champaign, Ill., have been received by the company which is to operate them. They were made by a Chicago company which, apparently, has not astonished the purchasers by prompt delivery.

"Yes, we would make power omnibuses and cabs," said Mr. Ellis, of the Ellis Omnibus & Cab Co., Cortland, N. Y., recently, "if we found a satisfactory motor. We have been established half a century and always aim to be up to date, but we feel that we must go on in the old way until we are satisfied that we have the right kind of power."

Some time ago this paper, referred to

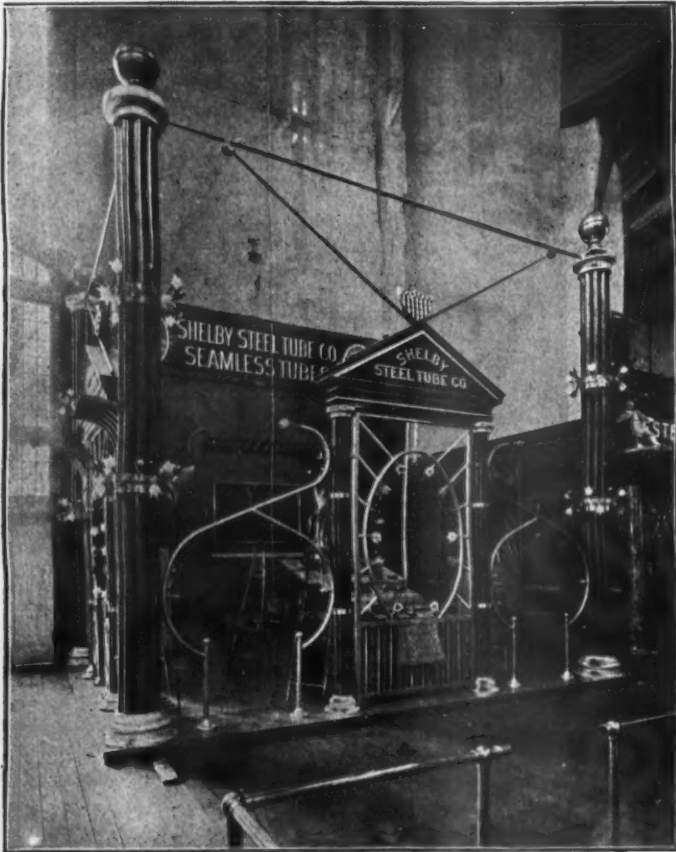
the new adjustable roller bearings invented by Mr. Bartholomay, of Buffalo, to whom patents were recently granted in all countries. A company is now being formed to manufacture the bearing at Buffalo.

A report from Milwaukee says that at least 50 riders from that city will make the tour to Buffalo to attend the annual meet of the L. A. W.

Last Saturday, at Revere track, Boston, Michael defeated Eddie McDuffie in a 20 mile race, by over seven laps, in 33:05 3-5.

On Tuesday of last week, at Baltimore, McEachern defeated Champion in a 20 mile paced race by four and a half laps.

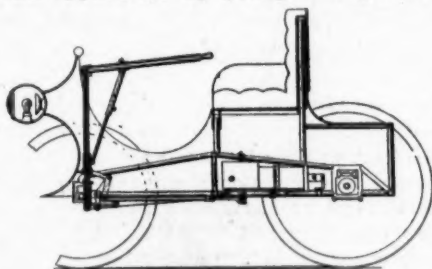
New cycle stores: Sld Barham, Cisco, Tex.; Jacob Kellman, 32 Main street, Chicago Heights, Ill.; V. V. Little, Kinsley, Kan.



THE SHELBY TUBE EXHIBIT AT BUFFALO.

IN THE WORLD OF INVENTION

No. 679,045, dated July 23, 1901, to Andrew Benson and John B. Benson, of Chicago, Ills., assignors of one-half to Robert P. Price, and John P. Price. This invention is one of a number taken out and applied for by young Chicago men



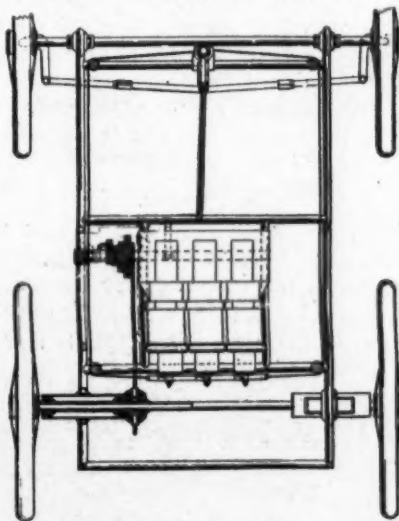
The Benson Vehicle.

who have shown remarkable ability in producing high class mechanical devices. It relates to a vehicle recently described in this paper. The inventors aim to provide means whereby speed and direction of motion of a vehicle may be controlled by one handle and, if desired, the operation of the motor may be regulated; also to improve and simplify the vehicle frame and the motor support.

The frame is plainly illustrated in the accompanying drawings, Figs. 1 and 2. It is tubular throughout. By the use of an arched tube running over and parallel (longitudinally) with the side reaches, and which is braced in the center, a truss is formed. By the use of two upright tubes on each side of the frame work, the forward one being shorter than the rear one, the seat may be attached, by slipping it on over said upright tubes, sockets being provided in the seat frame work for that purpose. Thus the seat is easily attached or detached. The outer part of the body may be made of any suitable material, preferably aluminum, and is so shaped in the rear that when the seat is slipped in position the rear

covering of the seat fits tightly over the upward extending portion of aluminum body covering, thereby making a joint which prevents dirt or rain from getting inside at that point. The front portion of the metallic body cover may be so shaped as to provide space for lamps as illustrated. The front and rear axle are each mounted in boxes, which slide in perpendicular slots in the frame work provided for the purpose, a cushion being used in the top of said slot to absorb vibration in the axle and prevent same being transmitted to the body.

The principal feature, however, is the steering handle mechanism in which is incorporated means for controlling the speed of the motor and for changing speeds by means of the transmission (For detailed description see patent No.



Benson's Frame.

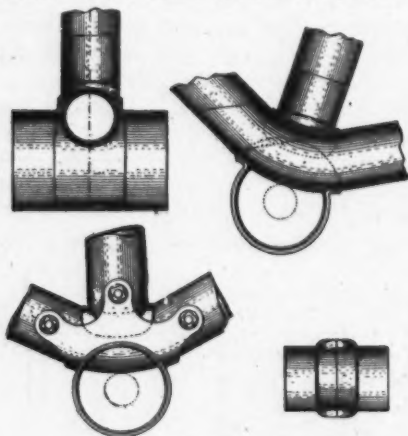
734,174, dated Sept. 18, 1900.) By turning the steering handle to the right or left, the intake valves of the motors are gradually opened or closed to any extent desired, thereby changing the speed of

WORLD OF INVENTIONS.

the motors. By using the steering handle in the usual manner, the direction of the vehicle is governed, and by raising it or lowering it, between certain points, the variable speed gears are thrown in or out of engagement as needed, thus regulating the speed at which the vehicle may travel.

Adjustable Handle Bar

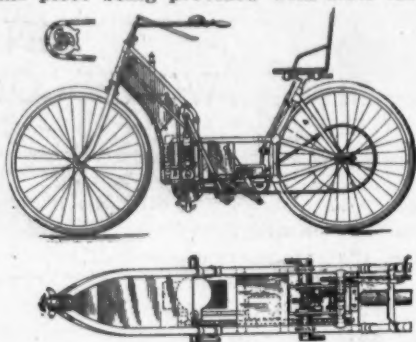
No. 679,086, dated July 23, 1901, to Louis L. Luce, of Mount Vernon, Wash., has for one object, the provision of a handle-bar construction wherein the end portions will be adjustable to raise and lower the grips and wherein the handle-bar proper may be attached to the common form of post having the split ring at its top for clamping the handle-bar against rotation. A further object is to provide a construction that may be attached to the usual handle-bar post and



Latta's Bracket.

wherein the handle-bar will be held in advance of the post or may be held in the rear of the post and may be raised and lowered bodily or be rotated to raise and lower the grips only. This is made

possible by providing a forged, or other strong form of central portion of bar which can be slipped through the usual adjustable handle-bar clamp, the ends of this piece being provided with slots into

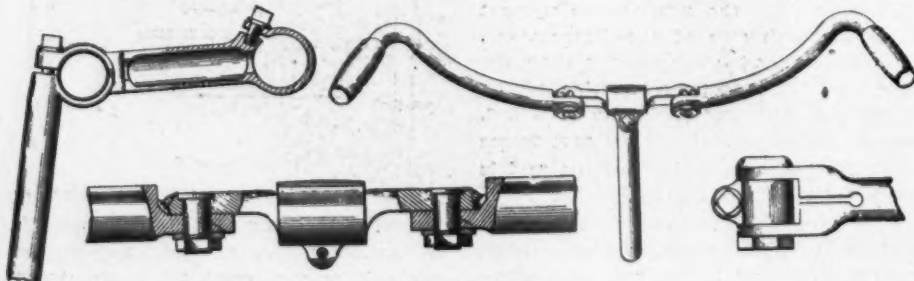


Strange Motor Cycle.

which lugs, on the face of the ends of the bar extensions, fit. These, when locked together, prevent the bars from shifting positions. The extension form of bar is also provided for by the use of an extra section which may be attached to the usual form of adjustable bar stem and into the outer end of which the bars proper are affixed.

Nichol's Bevel Gear Transmission

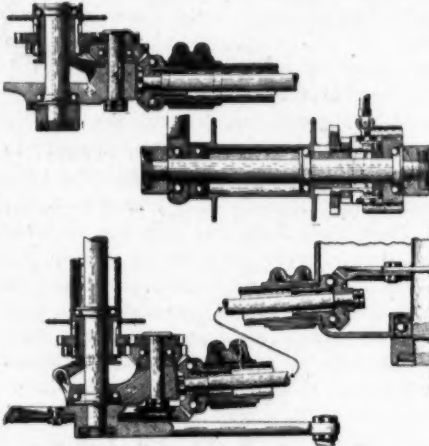
Letters patent, No. 679,283, dated July 23, 1901, to Marion L. Nichols, of Westfield, N. J., relates to a bevel gear power transmission suitable for single, tandem or triplet, cycle construction, and which may be changed from one to the other, retaining a compact form and neat appearance. It also provides a speed changing device connected to and being part of the rear hub, whereby two speeds may be obtained at will, each change being made by a shifting clutch operated from the rear seat, to which point runs a rod. There is little new in the device other than that part of the construction



Luce's Handle-bar.

WORLD OF INVENTIONS.

which allows either a single, tandem or triplet. When a tandem is to be changed to a three-seater, an extra seat is attached by clamps, and a pair of pedals attached to the rear hub axle, the right crank having a bevel gear on its



Nichol's Bevel Gear Transmission.

inner side to engage the rear pinion on the last transmission shaft. When solidly affixed to the hub axle, the cranks are enabled to assist in the propulsion of the vehicle by transmitting power to the bevel pinion and from that, through

either of two sets of spur gears, to the rear hub, the two sets of spur gears forming the speed changing device. This will be readily understood by reference to the drawing, Fig. 9. While the invention has merit it is questionable whether the prices at which cycles are being sold leave room for its adoption on a large scale.

A Brazed-on Bracket

No. 679,082, dated July 23, 1901, to Emmit G. Latta, of Friendship, N. Y., presents an idea to get away from the use of forgings and castings (and perhaps the Smith patent) by using sheet metal stampings and tubing. The illustrations give a good idea of the results to be obtained, both in the brazed and detachable hanger.

A Strange Motor Cycle

No. 678,863, dated July 23, 1901, to George W. Manson, of New York, N. Y., relates particularly to frame construction for motor-cycle use and with it is used a free clutch and changeable speed device. Instead of the operator using rotary pedals, the feet are applied to a pair of hinged pedal levers which, in turn, are connected to the revolving cranks thereby imparting power for starting the motor. When once started the cranks may be left in gear or thrown out as desired, being provided so as to start the motor, to propel the vehicle without the aid of the motor or remain stationary while the machine is in motion.





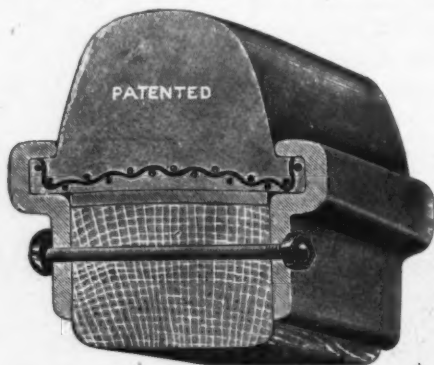
INFORMATION FOR BUYERS AND BUILDERS



The Calumet Tire Co., of 116-128 North Lincoln street, Chicago, is producing tires for the vehicle trade which contain features of construction of interest. The Price patent flange tire consists of a rubber tread, which gradually broadens toward the base, which base is extended at the sides to form flanges, by means of which the tire is fastened to the wheel. Near the bottom of the tire is a stiffening strip of steel wire cloth, so shaped as to reinforce the flanges above mentioned, and distribute all strains applied through the flanges over the whole base of the tire. This tire is molded in a circular mold somewhat similar to that used for making pneumatic tires. The steel wire cloth is first made endless by means of a metallic splice, insuring practically the full strength of the cloth at the joint. This steel cloth is then chemically treated, in order that the rubber during vul-

tributed by means of this basic stiffening over a large area, thus reducing their intensity at any one point. The side rims, by means of which the tire is fastened to the felloe, are of cold-rolled steel of a grade which will take temper. This shape gives an arch-like support to the felloe, enormously increasing the strength of the wheel. It is now being made in sizes from 2 to 6 inches, and for practically every diameter of wheel.

The company has largely increased its business in the last few years and is now erecting a new plant on the north side, which will be equipped with the latest automatic rubber working machinery. When completed their factory will be the third in operation and will largely increase the production of the specialties to which this company has given attention. Tires made by this company are used on the new 40-passenger bus recently put in operation by the Hub Motor Co., of Chicago. Besides tires, a line of tire-applying machines is made.



canization may be made to adhere to it. The molding process forces the rubber through the meshes of the cloth, securing a riveting action on both sides, and making the rubber and cloth essentially homogeneous. The tread is thus firmly supported, and all loads, instead of being concentrated at one point, are dis-

Odometer Checks Your Power Supply

That the Vedeer odometer is an almost indispensable attachment for automobiles is evidenced by the fact that nearly all of the prominent manufacturers are equipping machines, on leaving their factory, with them. Aside from the odometer's value as a distance indicator, it is invaluable on every type of machine. In steam carriages the operator, knowing that a certain quantity of water and gasoline will carry a certain distance, can tell by a glance at his odometer when his tanks need replenishing. On gasoline machines they serve in the same way to keep check of the supply of gasoline, and on electrics its serves as a check on the batteries. The odometer is made for all sizes of wheels and a

INFORMATION FOR BUYERS.

circular describing its mechanism can be obtained of the Veeder company, or by addressing the catalogue department of this paper.

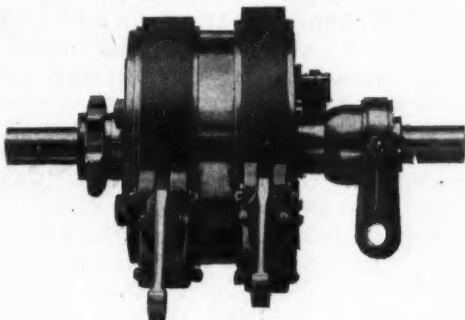
There are few concerns in the world which have so little competition as the Veeder company. It has been said that it is the only maker of odometers. This is not strictly true. There is a concern in Palestine, O., which makes an odometer and markets it through a Boston hardware merchant. It is called a bell odometer for the reason that it rings a bell at the end of every mile. It is a bulky affair of the old style dial pattern. The lack of successful competition to the Veeder is doubtless due to the accuracy the company has attained under its process and to the low price at which its goods have been sold. Ordinary machining tools, such as are used in most work of the kind, are expensive and unless kept in fine order the parts will not be sufficiently accurate to do effective work and assure smooth running of the instrument. It seems, therefore, that the Veeder process insures a practical monopoly of the business until such time as some other inventor discovers a method of doing the same work as cheaply as the Veeder company.

The Upton Special Transmission

The Upton Machine Co., 17 State street, New York, writes that it is receiving complimentary letters from users of the Upton special transmission gear, and explains that the special is in some respects the same as the regular gear, but with improvements. It is more compact, and whereas the regular style can be used connected direct to the engine shaft, or as an intermediate, the special can also be used for transmitting in a direct line, by use of universal couplings and bevel gears, to the compensating gear. The shaft of the special is of machine steel, turned down, and bored for the purpose of automatically oiling the internals, of which there are two sets of three brass bushed steel pinions which mesh in pinions cut (not keyed) on the shaft and also in a steel annular rack. The slow or hill climbing speed and the reverse are operated by the brake bands, the high speed by a friction clutch, and when the latter

movement is in use, the mechanism of the slow and reverse are idle, but always in mesh. Ratio, four to one.

The No. 1 4-horsepower weighs 35 pounds, while the No. 2, of 8-horsepower, weighs 55 pounds. No. 1 has a shaft 14 inches in length, is 7½ in. in



diameter, and has an 8-tooth sprocket for ½x1-inch chain. The No. 2 has a shaft 18 in. long, is 8¾ inches in diameter, and has a 9-tooth sprocket for a ½x1¼-inch chain.

Late Brecht Productions

The Brecht Automobile Co., of St. Louis, is building an electric brake for four passengers which will be equipped with two motors, one for each rear wheel, the two showing 7-horsepower. The company is also building a runabout with piano body, which will have a new rear axle construction, consisting of a steel arch over the axle from end to end, thereby carrying the weight as close to the hubs as possible and cutting down the leverage usually found in this class of machine, at this point. A single 3½-horsepower motor will drive the runabout. Besides the above, the company has almost completed an electric six-passenger brake, which will have two motors of 3½-horsepower each, directly driving the spur gear on each drive wheel, thereby doing away with a differential gear. The axles and fittings of all kinds made by the company for gasoline, steam and electric vehicles are having a ready sale.

The Rushmore Searchlight

Automobile operators who have done much touring will realize the importance of an automobile searchlight which will illuminate the road for over 1,000 feet

INFORMATION FOR BUYERS.

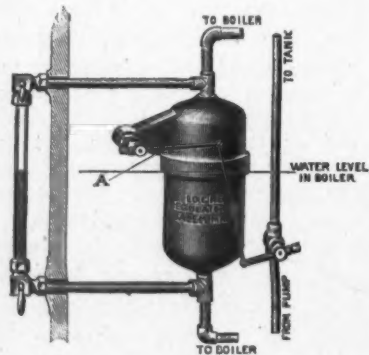
ahead. The Adams-McMurtry Co., of 114 Fifth avenue and 7 East 28th street, New York, has placed on the market the Rushmore automobile searchlight. The outside diameter is 10 inches, the reflector lens is 8 inches, and the length over all is 9 inches. It carries an acetylene burner giving from 75 to 125 candlepower. Experience has shown that when the light leaves the lamp it is 8 inches in diameter, and at 60 feet it is 4 feet in diameter, and larger in proportion to the distance. By moving the burden toward the reflector any size beam can be obtained. The main object of the lamp is to get as strong a light as possible with the least amount of gas. The company uses the Standard generator, which will run a lamp, full power, with one charge, for eight hours. The main feature of this lamp is the reflector lens. This is a corrective aplanatic lens which differs from others previously used, in that it has a corrective principle which compensates for area of flame. In the common mirror or reflector the actual focus is an infinite point, but as the acetylene light employed has a flame of considerable area, such a lens cannot give a perfectly straight beam. By this new design this difficulty is largely overcome. The lenses are of wonderfully strong focus. They are made of a special grade of glass, and for their finish a complete plant has been established, which, by the way, is the only one of its kind in this country. The lens varies considerably in thickness from the center to the edge and is the same length as is used in the big searchlights used in the U. S. navy.

Another feature advanced in favor of this light is that it throws a light considerably ahead and does not throw a glare directly in front of the carriage, which often makes the darkness of the night beyond more intense. The generator used for this lamp can be used for two side lights, as it is equipped with a three-way valve for permitting the main searchlight, or either or both of the side-lights, to be thrown off at pleasure.

The Latest Locke Regulator

The Locke Regulator Co., of Salem, Mass., has added to its line of automobile supplies a new and improved auto-

matic water level regulator for steam vehicles. This device, as shown in the cut, is compact and serviceable, and the Locke people claim that it reduces the possibility of a burned-out boiler to a minimum. The regulator itself is made to operate with a seamless copper float moving an easy-working balanced valve that has been especially designed for the purpose, this valve being placed in the by-pass pipe leading from pump to tank. The shell of the regulator is made of gun metal and will stand great pressure without collapsing. The float is tested to 400 pounds cold water pressure. This apparatus is placed directly opposite the glass gauge inside the carriage, on a level with the water in the boiler. A peculiar advantage of this apparatus is that it makes gauge cocks unnecessary, and even able to ascertain the level of water in the boiler by lifting the small arm marked "A," which raises the float enclosed in the chamber and allows it to drop back upon the water, thus showing the level of the water in the boiler. This device has been used by the Locke people on their own carriages for two seasons, and they have already sold a large number to operators of carriages of other makes. The jarring of the carriage over rough roads



keeps the float in motion, so that it is not allowed to get hung up or to stick in one position. As long as there is water in the tank and the pump is working there will always be water in the boiler. This water level regulator can be obtained from Ralph Temple, 293 Wabash avenue, Chicago; Charles E. Miller, 97 Reade street, New York, and from the

INFORMATION FOR BUYERS.

factory of the Locke Regulator Co., at Salem, Mass.

The company has for a long time made a gasoline regulator which is too well known to need any extended comment here. It has been sold in combination with the Kelly generator, from which it is almost inseparable, for they are advertised so extensively together and are so well known in connection with each other. The Locke company manufactures engines, boilers, water columns, cocks of all kinds, safety valves, steam and air gauges, and, in fact, a large line of steam specialties suitable for the automobile trade.

Serves Both Sides Well

It may be of interest to the trade to know that although the Motor Age catalogue department was organized only six weeks ago the demand made upon it for catalogues is growing steadily. One day last week a single mail contained requests for over 30 catalogues. The object of the department is to supply the catalogues of its advertisers to subscribers who may need them. The subscriber who needs more than one may save himself the trouble of writing a number of letters by writing to Motor Age for the lot. The applicant's name and address are forwarded to the maker in the same mail as the catalogue is sent to the subscriber.

Shelby Tubing at Buffalo

The Pan-American exhibit of the Shelby Steel Tube Co., at Buffalo, is unique and interesting. The many ways in which part of the product is bent and twisted is a revelation to the public who are not conversant with the uses of steel and also to a number of people who are connected with the steel industry. This company exhibits steel tubing for a multitude of purposes, the most important of which are tubes for stationary, locomotive, marine, and automobile boilers, varying in size from the $\frac{1}{4}$ -inch tube for automobiles to those $4\frac{1}{2}$ inches in diameter for stationary purposes.

There is also a fine display of tubing and specialties used in the manufacture of bicycles and motor cycles. Several novelties of various kinds, such as towel bars, easels, invalid tables and hall

racks, made of steel tubing are also shown, as well as samples of square, oval, triangular, octagonal, hexagonal, corrugated, spiral, and tapered tubing, the whole making one of the most striking exhibits, and being a credit to the manufacturers. The Shelby company is the largest manufacturer of seamless bicycle tubing and specialties in the United States.

New Factory in Indiana

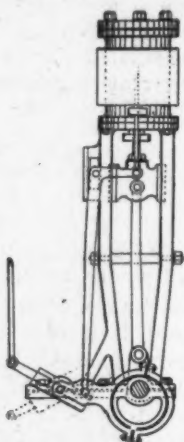
A month ago the solicitation of subscriptions to the capital stock of an automobile company was started at Union, Ind. Last week the company was formally organized under the name of the Union Automobile Co. with \$50,000 capital and already, it is said, men are at work clearing the ground for the factory. The list of incorporators is as follows: Geo. A. Lambert, John Lambert, Frank Lambert, Calvin Lambert, Samuel Lambert, all of Anderson, Ind., Thomas Warren, of Cleveland, John Parent, Daniel Cook, Annie Cook and Thieder Parent, of Union, Ind.

Reverse Gear for Steam Engines

The gear herewith illustrated is attached to one of the common type of vertical engines, but is also adapted to other types. There being only one eccentric and one rod for each engine, complication is reduced. No curved link is used, its place being taken by a straight slot or yoke in which slides a rectangular block, the wear on which is equal at all points of pressure, the block traveling beyond the ends of the slot or yoke. The eccentric is of large throw, but does little work, its operation consisting of moving the long end of the lever or pendulum which forms the eccentric strap. The motion produced by this mechanism is that of an irregular cam, very quick at some points and slow or nearly stationary at others, giving practically a motion that is a close model of the well-known Corliss cut-off. The points in its favor are that it runs silently at all speeds, and its simplicity and small cost. The range of cut-off is from one-sixth to full stroke. The gear can be used with much more lead—from 100 to 300 per cent—than the common Stephenson link, without bad results. It is claimed that engines equipped with

INFORMATION FOR BUYERS.

this gear never lose their lead, or, as they say in railroad parlance, get logey. A glance at the cut will show how readily the whole valve-motion can be submerged in oil by the construction of a



casing to go around and underneath the reverse gear, a hole being left for the reverse rod to operate through. This gear is covered by letters patent No. 512,956. It has been thoroughly tested on large engines, and is owned by John Grime, of 1701 South Seventh street, Minneapolis.

In addition to the Stearns story, told elsewhere, it is said at Syracuse that the Olive Wheel Co. will soon commence the manufacture of automobiles. Syracuse will, apparently, prove a hot-bed of automobile makers, as it was of cycle makers in the days gone by. The Olive company has been quiescent for some months and a few weeks ago Don Smith, who had been its manager, died suddenly. It was then supposed that the company would go out of business but its friends will be pleased to hear of the decision of its owners.

The capital of the Crowds Automobile Co. has been increased from \$100,000 to \$150,000.

Reporting its experience with a delivery wagon of Baldwin make the Calender, McAuslan & Troup Co., of Providence, says that in a trip which usually consumes 10 hours and requires the services of three horses, two wagons, two men and a boy it has had the same work done by one motor wagon, employing only one man, in one and a half

hours less time. The cost of the gasoline used on the trial was \$1.10.

The Bown Tire Valve Co. has been organized at Battle Creek, Mich., to introduce automobile tire valves. The valve is covered by patents, the principle being the use of a small rubber ball for a plunger and utilizing the air pressure within the tire to force the rubber ball to its seat. The makers claim that it is easy to pump and free from mechanical complication. The company writes that it will place the valve before the trade aggressively.

Eben C. Byam, of Haddon Hall, Commonwealth avenue, Boston, is touring through the White Mountains with a 5-horsepower De Dion. Sunday he ran 104 miles in 8 h. 5 m., good running for a hilly, mountainous country road. He writes that he intended to stop at the Profile House, but that the management would not allow the automobile on the place. It will be well for automobilists to steer clear of this house.

The Meriam charging plant for storage batteries, made by the Paragon Insulating Co., of Cleveland, is being installed in many eastern cities, and, according to Ellicott Evans, the Buffalo agent, is giving satisfaction.

The Steam Vehicle Co. of America is now turning out one of its regular style



vehicles with an extra dos-a-dos seat. It will list at \$850. An illustration of one of the carriages so fitted appears in this issue.

At a recent meeting in the offices of the Oneida Rubber Tire Works a company was organized for the purpose of dealing in and promoting the use of

CHAIN TRANSMISSION OF POWER IS SATISFACTORY

ONLY when frictional rivet surface and tensile strength are large in proportion to the working load.



NO. 155 FOR LIGHT RUNABOUTS

Equip your machines with large chains and avoid trouble.
Diamond Chains have large nickel steel hard rivets, are accurate and highly finished.

The Automobile and Cycle Parts Co.

DIAMOND CHAIN FACTORY
INDIANAPOLIS, IND.



THE GOODYEAR
PUNCTURE PROOF TIRE

OUTWEARS

ALL OTHERS

The Goodyear Tire and Rubber Co.

AKRON, OHIO.

LARGEST TIRE MAKERS IN THE WORLD

ADVERTISEMENTS.

automobiles. The following officers were selected: Theodore Coles, president; H. M. Reynolds, vice-president; S. Allen Clark, secretary and treasurer. Correspondence is invited with manufacturers desirous of representation.

A list of owners who have lately completed or are nearing the completion of home-made vehicles: N. F. Tilden, York, Neb.; C. H. Farnum, Baraboo, Wis.; R. S. Putnam, Mendon, Mich.; Herbert E. Smith, Park Place, Batavia, N. Y.; Claude Cramer, Garret, Ind.; Model Gas Engine Works, Garret, Ind.; Carl Bell, Greencastle, Ind.; Howard Coffin, Ann Arbor, Mich.

The G. W. Cole Co. has just issued a new catalogue, showing the multitudinous uses to which its well-known 3 in 1 can be put. For cleaning and lubricating purposes this preparation is so well known throughout the United States that nothing new can be added to what has already been said many times concerning it.

An automobile bus has been received at Hoquiam, Wash. It is owned by C. E. Kuhn and E. V. Smith, and will run between Hoquiam and Aberdeen, making a round trip every hour. It will carry 30 passengers, has gearing arranged for two speeds, 18 and eight miles per hour, the latter to be used on grades and heavy roads. It resembles a closed street car.

On August 12, R. H. Welles, manager, and L. J. Keck, traveling representative of the Badger Brass Co., will leave the factory at Kenosha, Wis., and start for New York in a steam vehicle, stopping for a while at Buffalo. Keck will then take a steamer for Europe. The vehicle in question is one which Welles has constructed at the factory.

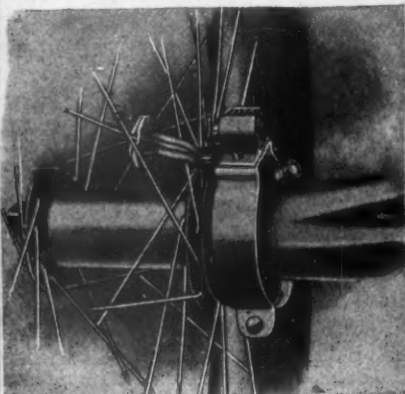
St. Anne's hill, at Worcester, was recently climbed by Lemont & Whittemore, agents in that city, in a Rochester steam vehicle. The grade is not stated, but in view of the fact that a number of unsuccessful attempts had previously been made, the makers of the vehicle are elated at the success.

James W. McEwen has organized a company and raised the greater part of the capital of \$50,000, among the business men of Olneyville, R. I., to operate a

When buying an Automobile see if it is equipped with a

VEEDER ODOMETER

If it is you may feel reasonably certain that its manufacturer pays careful attention to detail and it is a guarantee that he is not exaggerating the efficiency of his motor power or over-estimating his fuel capacity.



Odometer with band bracket Price **\$3 50**

The following leading automobile manufacturers have adopted the Veeder Odometer and offer it as a regular equipment without extra charge.

The Locomobile Co. of America, Bridgeport, Conn. The National Automobile & Electric Co., Indianapolis, Ind. The De Dion-Bouton Motorette Co., Brooklyn, N.Y. The St. Louis Motor Carriage Co., St. Louis, Mo. Milwaukee Automobile Co., Milwaukee, Wis. Electric Vehicle Co., Hartford, Conn. (Gasoline Carriages.) Rochester Cycle Mfg. Co., Rochester, N. Y. The Steamobile Co., Keene, N. H. Knox Automobile Co., Springfield, Mass. Buffalo Electric Carriage Co., Buffalo, N.Y. Foster Automobile Co., Rochester, N. Y. The Kidder Motor Vehicle Co., New Haven, Conn. The Beardsley & Hubbs Mfg. Co., Mansfield, Ohio. The Aultman Co., Canton, Ohio.



**The Veeder
Mfg. Co.**

HARTFORD, CONN.

Makers of
Odometers,
Cyclometers,
Counters,
Fine Castings.

Odometer, only price \$3 00

Made for 24, 26, 28, 30, 32, 34, 36, 38, 40, 41, 42, 44, 46, 48, and 50 in. wheels.

16-page catalogue free.



line of motor vehicles in Porto Rico. The concern will be known as the Porto Rican Transportation Co., and will use vehicles made by the Baldwin Motor Wagon Co., of Providence.

On Sunday, July 21, Fletcher L. Barrows, of Middleboro, Mass., drove his 5-horsepower De Dion from the State House in Providence, to Boston, in exactly 2 hours, beating all previous records. He carried two persons and three pieces of baggage. The distance traveled was 48 miles.

The Buffalo Cycle Component Co., of 229 Franklin street, which is managed by J. E. Kellar, will move about Aug. 1, to a more central place, possibly on Genesee street.

J. Ogden Armour, of Chicago, has just returned from Europe, bringing with him a Panhard machine.

MISCELLANEOUS

Advertisements under this head 5 cents per word first insertion; 3 cents per word each insertion thereafter. Cash with order. Express orders, postoffice orders or stamps received.

FOR SALE

FOR SALE—The Automobile Storage and Repair Co., 57 West 68th St., New York, have new and second-hand steam, gasoline, and electric carriages constantly on hand and have always some special bargains.

FOR SALE—Winton automobile, fall 1900 model, in good order, \$800. Will teach purchaser to operate and accompany him home. F. E. Low, Suberville, Ohio.

NO. 2 LOCOMOBILE, first-class condition \$485.00; No. 2 Locomobile, almost new, been run 75 miles, \$650.00; brand new "Locosurrey," \$1,075; Orient quad, \$300. I personally guarantee all the above. In stock ready for immediate shipment. A. L. DYKE, Auto Supplies, office Linmar Bldg., St. Louis, Mo.

WANTED

WANTED—A second-hand steam or gasoline vehicle, latter preferred; small; must be in good condition and delivered in Chicago. State make and best price. M 20, Motor Age, Monon Bldg., Chicago.

FENDERS

We can quote a very interesting price on automobile fenders. Write us for

AUTOMOBILE SUPPLIES

Eastern Automobile & Supply Co.

67-71 Fountain Street,

Providence, R. I.

Parts at a Bargain....

The advertiser offers for sale at about 40 per cent below cost the following

NEW GOODS

which were purchased for experimental purposes only:

Two 15x15 boilers, with steam superheaters, each	\$60 00
One 15-inch Milne burner with pilot light	25 00
Two water-level regulators, each	10 00
Two Locke fuel regulators, each	3 50
Two sets glass fittings, set	3 50
Two injectors, each	3 00
Two sets air and steam gauges, set	3 00
Two 6-inch gauges	3 50
Three sets water tanks, set	5 00
One 19-inch boiler and burner	150 00

All in splendid condition. Can be seen at any time in Chicago.

Address **STEAMFITTINGS,**

Care of **MOTOR AGE, Monon Building, CHICAGO.**



Vehicle
built by
Mr. H. E.
Hass, of
Beaver
Dam, Wis.
from
Dyke's
No. 1
Outfit.

BEAVER DAM, WIS., July 3, 1901.

MR. M. B. BEAN, Landsdale, Pa.

Dear Sir:—Your favor at hand in regard to A. L. DYKE Outfit, which I have used all this season in all kinds of roads. It is a first-class machine in every respect, good hill climber and speedy on level roads, and at same time a very stylish rig. I have the No. 1 Outfit with 5 H. P. Engine. I have found Mr. Dyke reliable and prompt in dealings. I just got home from a trip with my Auto, made about 300 miles and not a mishap, over a good many rough roads.

Yours truly,

H. E. HASS, Mgr.

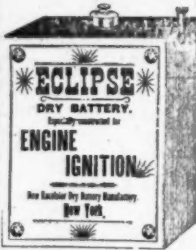
Beaver Dam Gas and Gasoline Engine Works

A. L. DYKE, :: Office, Linmar Building, :: ST. LOUIS, MO.

NOTE:—The above letter was written by Mr. Hass to a party who wished to know something concerning Mr. Dyke and his product.—A. L. DYKE.

NEW EXCELSIOR DRY BATTERIES

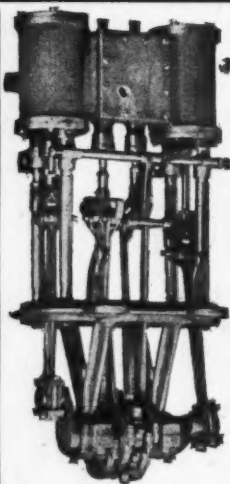
FOR ENGINE IGNITION



Our "Eclipse" Cell the most EFFICIENT
Dry Cell made

Adopted by two of the leading Automobile Manufacturers.
We make all shapes and sizes. :: :: :: :: ::

NEW EXCELSIOR DRY BATTERY MANUFACTORY
108 GREENWICH STREET, NEW YORK



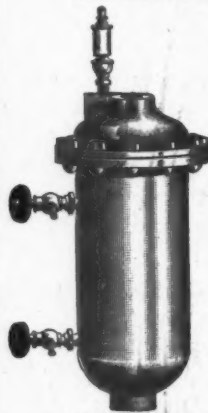
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Money
Saved!

This the "Xander" Auxiliary Hand Pump will accomplish, easily attached, fill the boiler in two (2) minutes, only pump entirely independent of feed pumps on the engine. Cheap, reliable, weighs only five (5) pounds, easily attached to any steam carriage. The "Xander Steam Engine, two cylinder, best on the market. Automobile parts, boilers, first-class machine work, etc. Agents wanted everywhere. Write today to

THE XANDER MACHINE & SUPPLY CO.
Reading, Penna.

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"Low Water Alarm for Steam Carriages"



Low Water in the boiler of a Steam Vehicle is particularly dangerous and expensive.

The Reliance alarm is light, strong, and easily attached. It gives the alarm before the water gets too low. Made on the same principle as the celebrated Reliance Safety Water Columns, for stationary boilers, that have been on the market for 14 years, and of which there are over 85,000 in daily use. When you buy a new steam vehicle, insist that the boiler shall be protected by a Reliance Low Water Alarm.

SAFE! SURE!
SUCCESSFUL!

Bank of Summer Summer, Iowa, Feb. 25, 1901.
THE RELIANCE GAUGE COLUMN CO., Cleveland, O.
GENTLEMEN:—In reply to your favor of the 22d inst, asking how I liked my Low Water Alarm sent me a few days ago, I beg to advise that the same is working entirely satisfactory. I have attached it to my "Locomotive" under the seat and between the engine's muffler and the boiler. I find the space just large enough and the main braces of the carriage are just right to support the Column nicely. I have tested it in various ways and find that it will always give the alarm just as the water leaves the bottom gauge cock in my water column. I consider the alarm very substantially made, and it would seem there is nothing to get out of order or cause trouble. There is no doubt in my mind that it will save my boiler a scorching sometime in the future. Yours very truly,

Signed, J. F. GASS, Vice Pres.

RELIANCE GAUGE COLUMN CO., Sole Mfrs.
Write for prices. 65 E. Prospect St., Cleveland, Ohio.
CHICAGO OFFICE, 79 LAKE STREET.

A Foot-
Power
Lathe and
Outfit
of Tools



Our No. 5 Lathe is a right and left-hand screw cutting lathe, swings 11 inches on face plate; 34 inches between centers. Is back-gear and has hollow spindle. Has set-over tail-stock and swivel tool carriage for tapering and boring.

SPECIAL OFFER!

The list price of No. 5 lathe is \$90. We will furnish the lathe with set of slide rest tools, three lathe dogs, 5-inch chuck with two sets of jaws, lathe arbor and set of Morse twist drills 1-16 inch to 1/2 inch by 3/8 in, in all amounting to \$110, for \$90 cash. Goods carefully boxed and delivered on board cars, Rockford. This gives the best lathe made, with full equipment of tools, for less money than you can buy an inferior machine.

Full Descriptive Catalogue Free on Application.

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POWERFUL, GOOD
LOOKING, STRONG

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Designer has patent, expert me-
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game and is prepared to engage
in manufacture with the right
party who will furnish capital

ADDRESS M. B., CARE MOTOR AGE

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Park Inn

1392 Amherst St., Buffalo. (Opposite Park Meadow.)

Beautifully situated in a grove of native oaks bordering on the extensive Meadow of Delaware Park. This is a fine modern residence, with large grounds lately occupied by the Country Club and fitted up by them, with extensive Kitchen and Porches, Porch and interior dining rooms. A thoroughly good Cuisine is a prominent feature of the restaurant.

A few large rooms en suite, large closets, baths, etc., (sanitary plumbing) also single rooms, are now ready for guests. Special rates made to long time guests.

By accurate measurement, PARK INN is but $\frac{3}{4}$ of a mile east of Amherst St. and Delaware Ave. gate (east gate) of the Exposition grounds. The south side of Amherst street is formed by Delaware Park, thus making a delightful walk to and from the grounds.

Trolley cars running direct from Railroad Stations to the Exposition grounds, pass within five hundred feet of the INN. The N. Y. C. Belt Line trains are within two blocks of the INN.

Take Main-St.-Pan-American, or Jefferson St. cars to Parkside Avenue and Amherst Street, or N. Y. C. Belt Line to Parkside Station. (Ask for "Belt" that stops there), and walk two blocks south to Amherst Street.

JOHN C. DUNHAM, Manager.

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Tickets Include all Expenses Everywhere.

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NEW WABASH EQUIPMENT.

The Wabash Railroad has just received and placed in service on its lines running out of Chicago the following new equipment:

Eight combination baggage and passenger coaches, thirty palace day coaches, ten reclining chair cars, three cafe cars and two dining cars. The majority of these new cars are seventy feet in length, and fitted with the latest style wide vestibules. They have six-wheel trucks with steel wheels. The cars are finished in the finest selected Jago mahogany. The lighting is by Pintsch gas with the exception of the cafe, dining and some of the chair cars, which are unusually well lighted by electricity, the fixtures being especially designed for these cars. The dining cars will seat twenty-nine persons and have ample kitchen space. The cafe cars will seat eighteen persons in the cafe, and have a library and smoking room in the observation end of the car which will seat fourteen persons. These cars also contain a private cafe with seating capacity for eight persons. These new cars represent the highest stage of the development of modern car building. Nothing has been omitted and no expense spared that would add to their luxurious elegance, or to the comfort and convenience of the patrons of the Wabash road.

No line is now better equipped than the Wabash for handling business to the Pan-American Exposition. Write for a copy of Pan-American folder containing a large colored map of the exposition grounds and zinc etching of the principal buildings.

F. A. PALMER,
Asst. Gen. Pass. Agt., Chicago, Ill.

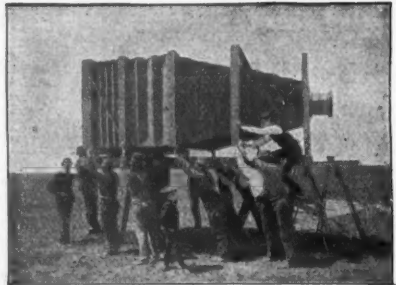
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The best for the least money. We supply **EVERYTHING** to build gasoline automobiles, from a single passenger to a truck. Send stamp for cat.

A. L. DYKE, - Linmar Bldg., ST. LOUIS.
(2 Years Experience Manufacturing Auto Parts.)

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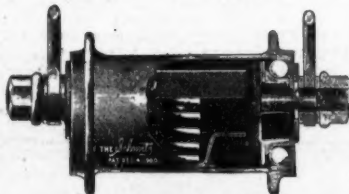
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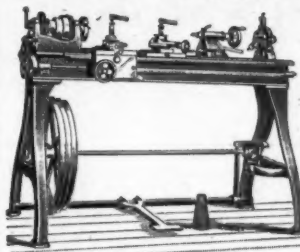
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Substantiates our claims, doesn't it? For full particulars address

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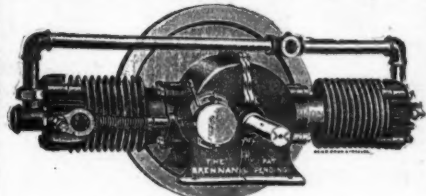
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Tensile strength
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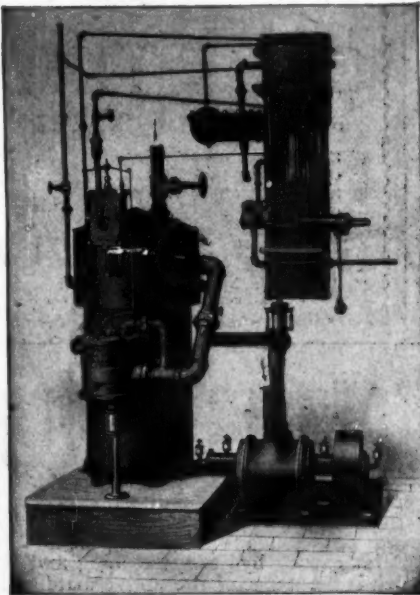
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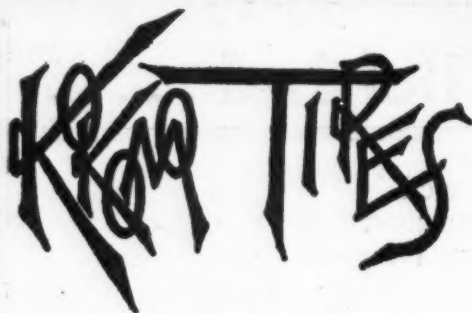
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No condensation.
Vaporizes every particle of oil.

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The only lamp that permits high speed on dark nights. Throws the light 1000 feet ahead of the automobile. For particulars address

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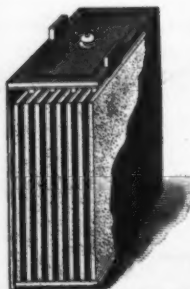
G & J TIRES

FOR AUTOMOBILES

are detachable, double tube tires. An occasional puncture is inevitable in any tire. Any one can repair a G & J Automobile Tire easily and permanently.

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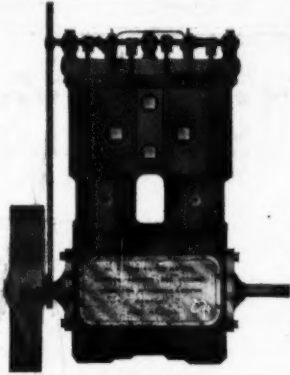
No Electromobile is perfect without them. Greater efficiency for less weight and longer life than any other battery. Each section of element is surrounded by a wall of porous material, thus preventing the deterioration of plates caused by heavy charging and discharging, which is the cause of the active material becoming loose and dropping in the bottom of the jar.

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A Good Motor with a Good Name

SIMPLE, QUIET, PRACTICAL

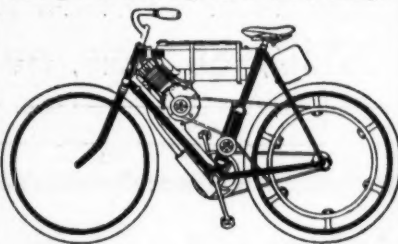
REMINGTON AUTOMOBILE & MOTOR CO., - Utica, N. Y.

Write us for catalogue of complete automobiles.

Motor Bicycle Records

Speaking of records made on motor bicycles without assistance from the pedals, a few facts are here told.

During the past two or three weeks it has been a common sight to see a **Thomas Auto-Bi** on the Buffalo Athletic field, pacing the men during their working-out in the evenings.



We don't know that Chairman Batchelder will recognize the following figures but they will be attested by any of the many racers and trainers who make the field their headquarters: $\frac{1}{4}$ mile, 21 sec.; $\frac{1}{2}$ mile, 44 sec.; $\frac{3}{4}$ mile, 1:08; 1 mile, 1:20; 2 miles, 3:03; 3 miles, 4:35; 4 miles, 6:08; 5 miles, 7:47; 6 miles, 9:15. These come mighty near making a new set of figures.

E. R. THOMAS MOTOR CO., (Inc.)

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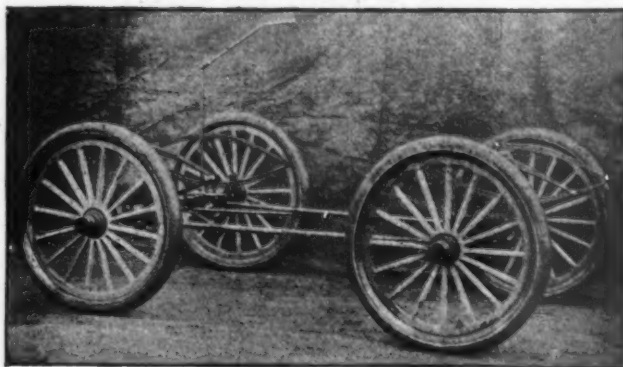
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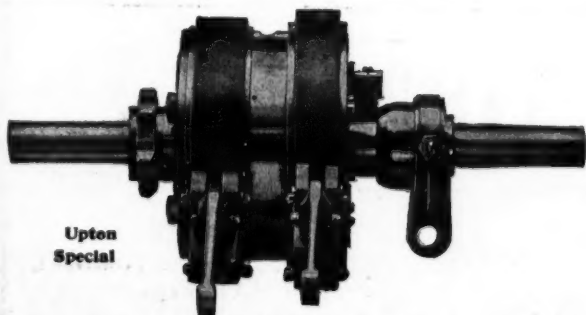
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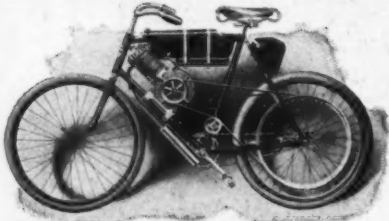
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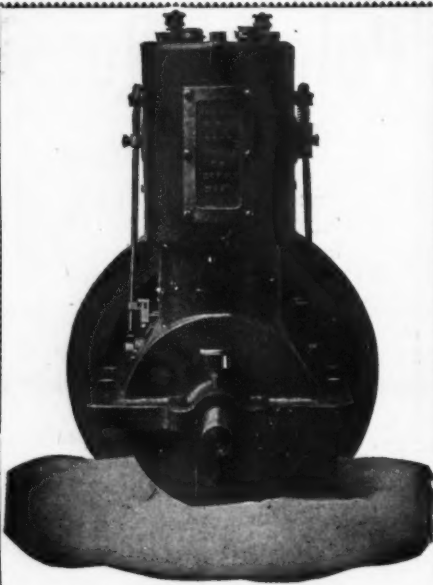
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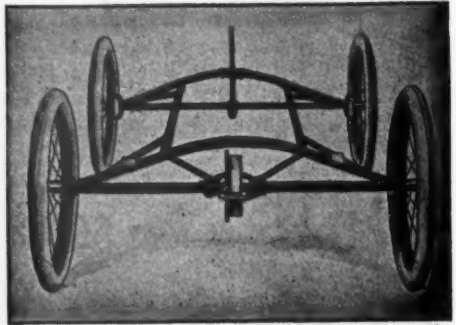
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